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MAURICE WILLIAM AND SUN YAT-SEN

"The meeting of two minds and of two civilizations: American and Chinese"

The dean of an eastern dental school, whose efforts to discredit dentists and dentistry have become notorious, has recently circulated a "memorandum" derisively calling attention to a superficial review of William's recent book on *"Sun Yat-sen versus Communism"* (1932). In this "review," a so-called "authoritative writer on China," admitting that the philosophy and phraseology in William's *"Social Interpretation of History"* (1921) were freely used by Sun Yat-sen in the formulation of the Chinese nationalist program, states, however, that this fact is unimportant because Sun Yat-sen has no influence on conditions or events in China. Such "authoritative" comment is sheer nonsense. Dentists who appreciate the great significance of William's remarkable relationship to the development and statement of Sun Yat-sen's national policies, and who—unlike the dean aforesaid—acclaim that relationship as inspiring evidence that the practice of dentistry is not incompatible with intellectual and social achievement of the highest order, will be glad to read the following statements in recent books by men of high repute who are widely known as responsible and scholarly observers in Chinese affairs:

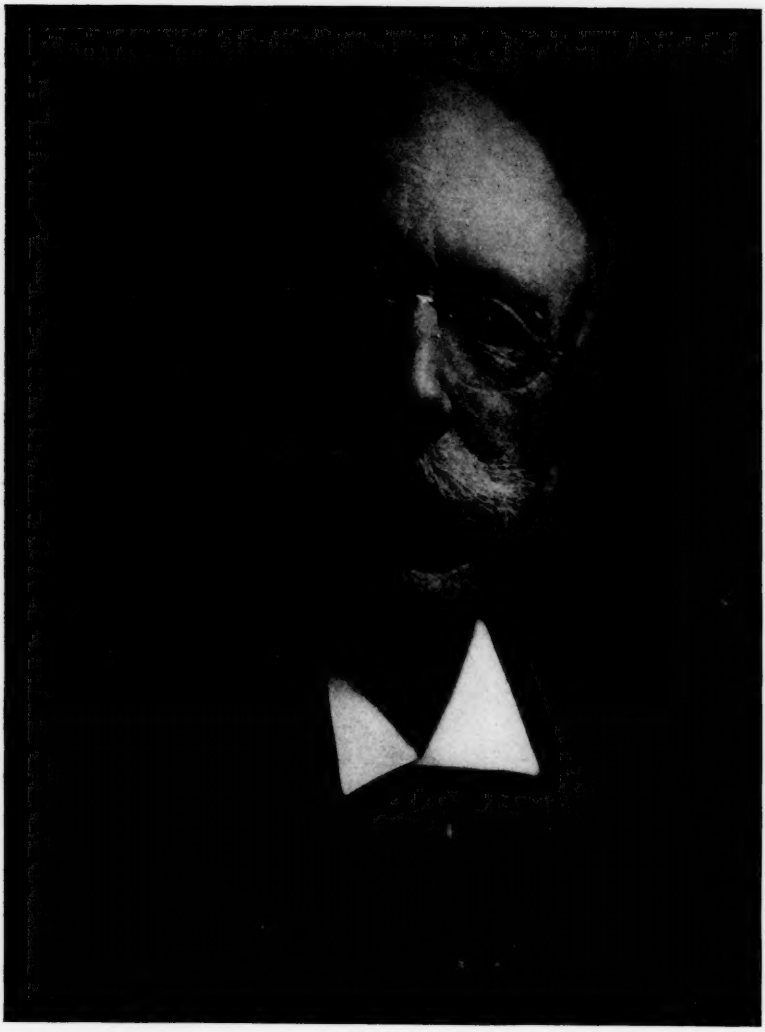
By George E. Sokolsky: "The Tinder Box of Asia," pp. 329–32; July, 1932. (Mr. Sokolsky, the New York Times expert on the Far East—having lived in China for many years—is an intimate, personal friend of most of the leaders in the Nationalist Government at Nanking.)—"Dr. Sun. . . . . began a series of lectures which laid down definitely the principles for which the Nationalists were striving. These lectures are known as the *San Min Chu I*—the Three Principles of the People. . . . . After Dr. Sun's death these lectures became the bible of nationalism. . . . . his basic social and economic doctrine was influenced by *The Social Interpretation of History* by an American, Maurice William. This book had as its sub-title "A Refutation of the Marxian Economic Interpretation of History." Dr. Sun mentioned William by name and quoted him extensively. . . . . *In death the Doctor [Sun] was a greater figure than he had ever been while alive* [although while *alive* he was the successful leader of a national revolution]. . . *he has become the national saint.*" [Italic not in the original.]

By Paschal M. D'Elia, S. J.: "The Triple Demism of Sun Yat-sen," pp. 421 and 543–44; 1931. (An original translation from the Chinese into English of Dr. Sun's San Min Chu I, or the Three Principles of the People. Father D'Elia is a member of the Sinological Bureau, Shanghai, China.)—"Dr. Sun drew his best arguments to oppose the doctrine of Marx from Dr. Maurice William's *'The Social Interpretation of History'*. . . . . Since the Nationalists are in power, scarcely a day passes by without an *official edict of the Government adding its stone to the grand edifice of the future nation, a nation to be built anew entirely upon the rock foundation of the Triple Demism [Dr. Sun's San Min Chu I, or the Three Principles of the People]*. If China 'awakens'—so speak the Chinese themselves—if she is convinced that she must develop her industries, her education, her administration, her Government—in a word, everything—*she believes that all this is impossible unless it is based on the Triple Demism. The password, the touchstone of everybody and of everything is in this 'ism,' and in this 'ism' alone.* When there is question of incorporating into the Party those who yesterday were enemies, or of planning reforms and mapping out the future, hardly any other question is asked but: "Are you in favor of or opposed to the Triple Demism?"; "Does that law, that plan conform to the Triple Demism?" Things have gone so far that sentences of death or of life imprisonment have been contemplated against all anti-revolutionists, meaning thereby all those who would be bold enough to hold a doctrine opposed to the Triple Demism. *Foreigners who witness a fact of this kind cannot understand it; they cannot go that far. But they are forced to bow before it and to admit it even in spite of themselves.* Sun Yat-sen's book has been broadcasted all over the country. *It is meant to be the code of the new generations.* It has to bring forth a new nation. *In the mind of the present leaders of China this book must be made a compulsory text for all the schools, even mission schools.* Mention is even made of one school for girls which used no other textbook nor program of study but the Triple Demism. At the end of the school-year students must pass a special examination upon this new topic. *In the tests for government office the candidate must, first of all, show that he has mastered the Demist doctrine.*" [Italic not in the original.]

The report of the League of Nations' "Commission on the Manchurian Dispute," as published in the daily press on Oct. 3, 1932, contained, among its ten stated "conditions of a satisfactory solution" and as a *"final requisite,"* the following recommendation: "temporary international coöperation in the internal reconstruction of China, *as suggested by the late Dr. Sun Yat-sen.*" [Italic not in the original.] Here we see an extension of Sun Yat-sen's living influence from China *into the deliberations of the League of Nations.*

Since the publication of the above statement, in this place in our issue for October, I have had an opportunity to read a copy of *"Manchuria: Report of the Commission*

(Continued on p. 3 of the cover)



Theon Wilcox

JAMES LEON WILLIAMS, D.D.S., L.D.S., F.A.C.D., F.R.A.I.[1]

GEORGE WOOD CLAPP, D.D.S.

New York City

Samuel Smiles tells us that when the Archbishop of Canterbury wished to draw the character of his deceased friend, Lord Buckhurst, he dwelt not upon his abilities as Lord High Treasurer of England during two reigns nor upon his genius as a poet, but rather upon the quality of spirit in which he met the ordinary affairs of life.

Now that my friend has gone, I find myself thinking less and less upon his achievements in anatomy, histology, pathology, the science and art of dentistry, photography, painting, literature, anthropology and philosophy, and more and more of the zest for intellectual adventure with which for sixty years he faced unsolved problems, mistaken beliefs and powerful opponents. His scientific work carried the banner of thought forward in his day. What in it is right others will confirm and adapt to later days. What in it was mistaken they will correct. That is what he desired.

On April 18, 1852, was born James Leon Williams, one of a long line of idealists and idol-breakers. Somewhat more than two hundred years before, Roger Williams had left England to seek spiritual freedom in Plymouth Colony, then no more than a noble experiment. He found there wider horizons than he had left, but either they contracted or he grew. Driven by his vision, he founded Providence Plantations, where for the first time in America the white man was free to worship God after the dictates of his own conscience.

During the next century other Williamses fought for political freedom as Roger had fought for spiritual freedom, and some among them rose to distinction during the struggle. The war over and peace palling, Capt. Jacob Williams set out to conquer the wilderness. In

[1] Dr. Williams was one of the founders of the International Association for Dental Research, and a member of the board of editors of the *Journal of Dental Research*.—[*Ed.*]

1785 he paddled up the Kennebec River in Maine in a canoe, selected an attractive spot just below Caratunk Falls and founded the settlement into which, sixty-seven years later, James Leon Williams was born. Fortunately for Leon, as he came to be called, some of the conditions in his home were what a youth of today would call primitive. Books were few, but they were read, pondered, discussed and reread. He learned his letters and his first words out of the Bible and Pilgrim's Progress. The grand old Bible stories came to him as they might well come first to all of us, merely as stories fitted close to life, the spiritual significance of which develops as experience broadens.

Authors now studiously avoided by all of our young folks and by too many of their elders formed the backbone of the home library: Bunyan, Comstock, Huxley, Tyndall, Spencer, and Fisk. Out of them he stored, unconsciously, treasures that were to stand him in good stead, so that when, for instance, a little known stripling, he was called to public account for his idol-breaking, with the cards stacked against him he met and defeated Garretson, then one of the most popular figures and powerful speakers in the dental profession. From association with these authors he developed the effortless grace which characterized his writing.

Leon seems never to have been robust in that all-conquering physical prowess by which Maine farmers wrung a living from a rocky and reluctant soil. About the age of seventeen he entered the office of Dr. Roberts, a dentist of North Vassalboro, Maine. After two years of industrious apprenticeship he began practice in the same town. Later he passed examinations for the degree of Doctor of Dental Surgery at Baltimore, and for the degree of Licentiate in Dental Surgery at the Royal College of Surgeons, Ireland.

The contact with vital things of which only the beginnings were known awoke in him the same spirit of adventure that had sent Roger Williams to Providence Plantations, and Capt. Jacob Williams to war and to the wilderness. He joined the Maine Dental Society and obtained the loan of its microscope. Working with home-made accessories and learning the technic of microscopy, specimen preparation and photography by reading and correspondence, he extended the knowledge of the histology and pathology of enamel and fought val-

iantly on the platform and in print for his discoveries. I have summarized elsewhere[2] the outstanding results of this work and of his achievements in photography, painting, anthropology and literature and need not repeat them here.

Dr. Williams used to insist that the dreamer and the scientist might be among the most practical of men, and the achievements of his later years seemed to prove him right. Certainly his contributions to the craft of dentistry and through that craft to the public were of greater immediate and practical value than the results of the researches he loved so well and pursued so long.

In the early 80's, when the principles and technic of crown- and bridge-work were generally unknown to the profession, when information concerning it was difficult to get, and when this form of service was anathema to those dentists who, helpless from lack of knowledge, suffered from competition by it, he made information about it available to all through the pages of *The Dental Cosmos*.

In 1895 he entered upon a crusade which was to engage most of his time and thought thenceforward. It was to arouse an insensitive and indifferent profession to the possibilities in artificial dentures, then probably the least esteemed and most poorly rendered form of dental service. Conceiving that better forms of artificial teeth were a necessity as well as a means to improved service, he expended his first efforts upon the manufacturers of artificial teeth; but, since nobody in the profession but him seemed much concerned, they, comfortable in the assurance of easy business, declined to venture out onto the seas of experimentation and expense. Turning toward the dental profession, he splintered the lances of his earnestness and eloquence, for nearly ten years, against its inertia and indifference, without apparent result. Finally, he was able to conclude with an American tooth-manufacturer an agreement to carry out his program if the dental profession indicated a reasonable desire for it. Renewed efforts, now with the support of important leaders in this country, procured the necessary manifestation; and at the age of fifty-eight, when most men have passed the physical and mental zenith of their

[2] *The Life and Work of James Leon Williams;* The Dentists' Supply Company of New York, 1925.

lives, he entered upon a new campaign for his beloved profession. He discovered the typal forms in teeth and gave Berry's law of harmony between face form and tooth form practical meaning where, previously, only theoretical meaning had been possible. He isolated the more frequently seen combinations of the typal forms. Then he conquered the art of carving plaster pattern-teeth, which has been mastered by but few men in the world, and brought to it a professional knowledge and artistic ability never before evidenced in it, so that the forms which he carved are now accepted the world around as unequalled in beauty and naturalness and in theoretical and practical value.

Then he dropped the carver and took up the pen and piled art upon science in persuasive argument, which demolished the temperamental theory of tooth form, and substituted for it the science of his new discovery. It is now a little more than eighteen years since that March night when he made the initial presentation before The First District Dental Society of the State of New York. He lived to see his work acclaimed the world around and given the sincere flattery of imitation. The best proof of its practical success is that all the anterior teeth which now seek the dentist's favor on a quality basis are efforts to incorporate the principles of form he introduced or are copies of the forms he presented.

There are men who measure the success of lives only by their power to earn money. Dr. Williams made no effort to earn great sums for himself, but there is excellent reason to believe that his last crusade has enabled the dental profession to earn at least two hundred million dollars more than it would have earned but for him, and if we go back forty years to the days when he made crown- and bridge-work available to thousands of dentists who might otherwise have long remained ignorant of it, that sum might probably be increased to five hundred millions. Even on this lowly basis, his was a great life.

Many of the circumstances of Dr. Williams' mature life were very pleasant. He enjoyed a wide circle of friends on something like his own intellectual level, and received from the dental profession and from scientific men in other walks of life many testimonials of esteem and admiration. He was a Fellow of the Royal Anthropological In-

stitute of Great Britain and Ireland, Fellow of the New York Academy of Science, Fellow of the American Academy of Dental Science, Fellow of the American College of Dentists, President of the International Association for Dental Research, President of the National Society of Denture Prosthetists, member of La Société Odontologique de France, and honorary member of more than twenty other dental organizations in other parts of the world.

A few years ago he purchased the farm upon which his boyhood had been lived, and built there a summer home in which he passed many happy hours. His winters were spent in New York, where he died, suddenly, on February 23, 1932. He is survived by Mrs. Williams and two sons from a former marriage.

What is it that fires men to unceasing industry and effort from which all save a tiny portion of the benefits must go to others? What does such a mind as Dr. Williams possessed think when in its quiet hours there come to it those questions which come to all of us: why are we here and where are we going?

During more than twenty years in which Dr. Williams and I worked intimately together, often in darkness where we sought light and with little results where we desired great, we often asked ourselves why any one should work thus. He always answered the question by saying that he was bound to follow what he called the "inner voice." His fidelity in following that voice not only made possible his scientific presentations but tempered the mainspring of his life. Let us see to what beliefs about life it led him.

Dr. Williams believed in God. He had his own definition for Him. He never gave Him substance or form. He never tried to comprehend or understand Him. He thought of Him as "Whoever Is Behind Whatever Is." To Dr. Williams He was always present, everywhere, in everything. It was He who held the stars in their courses and gave teeth their form. When Dr. Williams looked out of his window and saw the ships move to and fro upon the river, some by wind on their sails and others by the energy of sunlight stored up millions of years ago in the form of coal, they moved, to his eyes, by the power of God. It was God who gave form and color to the landscapes he loved to paint, and who arranged the bundles of enamel rods so as to distribute the stress to which teeth are subject. Better than

most men Dr. Williams knew what the Apostle Paul meant when he talked to the Athenians about that God who made the world and all things therein, and in whom we live, move and have our being. Dr. Williams believed in God.

Dr. Williams believed in religion. He had a definition for it which you will not find in the dictionaries. He was not afraid of definitions. He and I made them as we needed them, put them to work in our lives and changed them as experience required. We defined religion as "man's search for a friendly God." When man first visualized his universe, he found himself surrounded by forces he did not originate nor understand and could not control. He knew only personalities and so he thought of these forces as gods. Because he and his fellows often suffered and died from conflict with them, he thought of them as hostile gods and lived in fear of them. When he was mentally a little older, he began to think that perhaps he could win their friendship by prayer and gifts. Man was searching for a friendly God.

Within recent years science has taught us that favor is to be won from nature not by sacrifices and prayer but by understanding and coöperation. Thus science becomes the hand-maid of religion in the search for the friendly God. Dr. Williams always had it in mind that his labors should bring about a better understanding of a bit of the divine handiwork and so make man and God more friendly. Dr. Williams not only believed in religion, but lived it.

Dr. Williams believed in inspiration. When he and Prof. Gysi and I became sufficiently well acquainted to talk freely about those things which a reticent man mentions only to his intimates, we found that we had come, individually, to four identical beliefs:

That nothing we could do by our own knowledge and strength was likely to prove importantly constructive.

That God had constructive work for every man to do.

That if man would breathe in and apply the spirit of service, God would supply knowledge and power and wisdom according to the man's capacity, opportunity, and willingness to use what was given him.

That our little knowledge and strength were, as Trine has said, for keeping us in tune with the Infinite, and that once in tune we should keep ourselves out of the picture and let God's message come through.

Dr. Williams was born into and grew up in a home where the spirit of service was accepted as a fundamental of life. Prayerfully he sought harmony with God. Scrupulously he sought to keep himself out of the presentations he was permitted to make. He believed in inspiration.

Dr. Williams believed in aspiration, which, to us, was the other side of inspiration. You cannot breathe deeply and hold it indefinitely. You have to breathe out so that you may take another breath and live. To us aspiration came to mean "turning the spirit of service into constructive work." He carried that spirit to the end. The last weeks of his life were spent in preparing part of a symposium which he hoped might help to clarify some of the causes of dental caries.

For more than fifty years Dr. Williams scorned delights and lived laborious days and nights so that he might contribute to his beloved profession the things that were given him. Dr. Williams lived aspiration.

Dr. Williams believed in the evolution of the spirit of man. As an anthropologist he knew that man has not increased much in stature or intelligence in recent ages, and that no noticeable increase seems probable. He traced the unfolding of man's spiritual nature from its first faint dawning down to the present day, and he believed that it was only well begun. He knew the story of its slow advance through ignorance, fear, superstition, and cruelty. He regretted that man should keep his head down and stumble when he might lift it and walk, but he knew that man will learn in no other way.

He knew that under favorable conditions certain physical organisms never undergo natural death, but are immortal. And he believed the spirit of man to be immortal. He was well aware that many intelligent and earnest people hold such a belief unfounded, that they believe all ends at death. He always felt sorry for those who held such belief, and he would have been even more sorry if they could have proved their faith right. If the paltry spiritual advances which man has so far made, with their sin and inequality and suffering and their all too frequent defeat of fine enthusiasms and ambitions, are the sum total of the long-drawn-out and often fierce and painful process of

evolution, then is the universe not only the riddle that Haeckel called it; it is a more ghastly tragedy than the mind of man could conceive.

But if this life is only the childhood of the spirit, a sort of training ground wherein man learns the habit of breathing in inspiration and trying his fledgling wings in aspiration, and if he is promoted, on merit, to levels on which he works out his spiritual youth and maturity, things fall into a more understandable and tolerable and hopeful order. And we agreed that we could live and work more happily and hopefully in the belief that the spirit of man is immortal and would get a chance to work out its youth and maturity, even if such a faith were mistaken, than we could in the belief that death ends all and that only altruism, like a painted candle, is left as the source of our inspiration. Our faith, with its hope of personal gain, might be more selfish, but for us it was more vital. Dr. Williams lived in faith that the spirit of man is immortal.

A few years ago, when Dr. Williams knew he was failing physically and on a day when I think he felt especially infirm, he related the following incident and left with me a message.

"In my boyhood," said he, "I lived on a farm near Solon, Maine. On all sides, save one, our view faded easily into the horizon, but on the north it was shut off by Old Moxie, which seemed to me, as a child, a high mountain. Always, when I looked at it, that mountain aroused in me the desire to know what was on the other side of it. So, while still a little lad, I said to my father: 'What is on the other side of the mountain?' And he, answering me in words from Pilgrim's Progress, which I knew well because it had been one of the primers from which I had learned to read, replied: 'The Delectable Land.'

"This change which we call death, which shuts off so abruptly our view of the other world, arouses in me much the same feeling that the mountain aroused in me as a boy. I am curious to know what is on the other side. So, if you outlive me and any one asks where I have gone, tell him that I have gone to find out what is on the other side of the mountain."

Dr. Williams has gone, and many of us will miss him. He has left something of his vision and spirit to those of us who worked with him and whom he expected to "carry on" when his part of the task was finished.

As regards his memory, two courses are open. We may hug his loss to our hearts and selfishly grieve, or we may think of him as gone on a journey for which he had a strong curiosity and was unusually well equipped, and we may wish him, in the most literal sense of the term, Godspeed.

220 West 42d Street
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DENTAL EDUCATIONAL COUNCIL OF AMERICA

President's Annual Address[1]

HENRY L. BANZHAF, B.S., D.D.S., F.A.C.D.

Marquette University, Milwaukee, Wisconsin

Last February I prepared a statement entitled a "summary of conditions and principles on which the work of the Dental Educational Council of America is conducted," in the hope that it would be of value to the members of the Council. The statement was approved by all the members present at the informal meeting of the Council in Columbus, in March; also by some who, unable to attend, wrote commendatory letters. In that statement, were itemized what seemed to be the principal needs of dental education. I regret that, since last spring, owing to influences beyond our control, no material progress has been made to improve any of the conditions that were then pointed out. How, in the face of the present period of slashed budgets and business depression, can endowments be increased and more generous public funds be obtained for graduate work in dentistry, for more extensive dental research, for larger dental libraries, and for the employment of better paid, more competent, whole-time teachers—all of which were touched on in my statement? Although we all have faith that these specific improvements will be accomplished eventually, it is obvious that they must await the return of normal times.

While this may be true, I believe that the members of the Council are agreed that this is no time for inactivity. We must continue, as we have in the past, to reflect the opinions, responsibilities, and support of the three parent bodies by combating all efforts to convert dentistry into a specialty of medical practice; by aiding in improving the relationship between medicine and dentistry; and by taking such steps as may encourage the extension of the benefits of oral health-service to all persons irrespective of their economic situations. We

[1]Read at the annual meeting of the Dental Educational Council of America, Hotel Statler, Buffalo, N. Y., September 9, 1932. See the Addendum, p. 901.

should not, however, pending the report of the Committee of the American Association of Dental Schools on the Survey of the Dental Curriculum, make any new suggestions to dental schools, or regulations for them, or inspect them, except at their request individually. To do so would be illogical, since the standards we might set up, so far as they relate to the curriculum, may soon be changed or modified by the Committee's findings.

The thorough and unhurried work that is being done by this Committee, and its competent Executive Secretary, makes practically all dental educators, who wish to terminate this period of uncertainty regarding the dental curriculum, feel confident that the final report will prove acceptable to nearly all the schools, and be adopted generally in the interest of efficiency and harmony. It would be too much to expect unanimous coöperation, since there is at least one Dean who, if he had his way, would destroy the very identity of the dental profession, change its time-tested policies, and relegate it to the inferior position it now holds in England and some other European countries. The Council must be actively functioning when the report of the Survey Committee is published, in order to lend the full weight of its influence for the report, if, as we all feel assured, the report is acceptable—believing as we do that the work accomplished by this Committee will be the most important step taken in behalf of dental education since the publication of "Bulletin 19" of the Carnegie Foundation. The dental profession, which owes a deep debt of gratitude to the Carnegie Foundation, is grateful also for the financial assistance so generously extended to the Committee by the Carnegie Corporation. The Council will have the opportunity of performing a great service for dentistry and dental education by being on guard to see to it that the fullest measure of benefit is derived from the valuable work that is now being done.

I want to express my faith again in the future usefulness of the Council. Its many years of service in behalf of dental education have gained for it the confidence of the dental profession. Consisting as it does of an equal representation from the American Dental Association (the entire group of organized practitioners), the National Association of Dental Examiners (the official licensing representatives of the individual states), and the American Association of Dental Schools

(the faculties of the dental schools), the Council reflects as does no other body the opinions and experience of the dental profession in all matters related to dental education. No one of its three components has ever dominated the activities of the Council. The experiences and opinions of the dental practitioner, of the state board examiner, and of the dental teacher have all been brought to the Council. As a result, the advisory and coöperative service rendered by the Council has always been progressive and thoroughly representative.

The Council has in the past been criticized by individuals who honestly differed with its practices and policies, or by those who were disappointed because of a low rating given to a school with which the individual was connected. Such criticisms are inevitable, and fair criticism is welcome and helpful. The insincere, unprincipled, and dishonest campaign of deliberate slander to which the Council has been subjected by one individual, however, has received so much publicity that notwithstanding the fact that I have no desire to dignify it by a direct reply, I am of the opinion that it cannot longer go unanswered without subjecting us to the suspicion that the Council is either guilty of the charges or too weak to reply. I should prefer to let so shoddy a venture break down under its own weight of malicious representation. I refer to the recurrent attacks by Dean Alfred Owre, of the School of Dental and Oral Surgery, Columbia University —particularly to the misrepresentations in his pamphlet on "Some phases of dental education in the United States" (1931), copies of which have lately been distributed freely, bearing the stamp: "With the compliments of the School of Dental and Oral Surgery of Columbia University." As is stated in a review printed in the *Journal of the American Medical Association* (1932, xcviii, April 23), Dean Owre's paper "carries the implication that, in the transformation of dental schools which has been taking place during the last decade, the Dental Educational Council of America has not uniformly stood for high ideals and university standards or always kept clear of the commercial aims which have in many instances carried over from the proprietary school era." When such an influential organ as the *Journal of the American Medical Association* dignifies Dean Owre's paper with a published review, it is high time that the truth be brought to light.

In this pamphlet Dr. Owre makes the following specific charges:

(*a*) That the Dental Educational Council of America is a reactionary body. (*b*) That its activities are on the side of lower rather than higher standards in professional education. (*c*) That it has given several low-grade schools an A rating and refused to raise the rating of two schools from B to A when in his opinion this should have been done. (*d*) That the rating of the School of Dental and Oral Surgery of Columbia University has not been raised to A.

These charges are made in conjunction with a further argument for Dean Owre's pet idea of abolishing dentistry as a separately organized profession. In a critical analysis of "The writings and activities of Dr. Alfred Owre in relation to the status of dentistry," published in the *Journal of the American Dental Association* (March, 1931), Dr. Bissell B. Palmer, of New York, comes to the following logical conclusions, and it is perhaps sufficient to quote them to show Dean Owre's attitude toward the dental profession: (1) Dr. Owre is opposed to a continuation of the present separately organized dental profession. (2) Dr. Owre's attitude on the question has received no endorsement from organized dentistry. (3) Dr. Owre has unfairly exaggerated the shortcomings of the dental profession. (4) Dr. Owre's failure to acknowledge the presence of much of anything good in the dental profession and his tendency to find nothing but perfection in the medical profession should cause his proposals regarding either profession to be regarded with skepticism.

In supporting the contentions in his pamphlet ("Some phases," etc.), Dean Owre adds an "appendix," some thirty printed pages in length, in which he purports to "show the continuity of the minority thought *favoring scientific dental education* in the United States," by quoting from all of the authorities, chiefly himself, who seem to favor his point of view. By implication he would have the reader believe that the majority of dental educators does not favor scientific dental education, yet it is true that the deans of all the dental schools in the United States are in favor of "scientific dental education." Reading through the fifty-six excerpts from the authorities that Dean Owre has listed, I find myself in practical agreement with most of them. For example, of the first twenty quotations, any dentist, disagreeing most emphatically with Dean Owre, would find himself in complete agreement with the thought expressed in at least sixteen or seventeen. This illus-

trates the difficulty Dean Owre encounters, and the lengths to which he must go, in his attempts to produce an imposing list of authorities in "support" of his destructive contentions.

The reason why this self-appointed "reformer" cannot add to his following, except a few individuals on the faculty of which he is Dean and who depend upon his pleasure for their positions—although he has thundered away for the past four years—is because his chief propositions are fantastic and impracticable, and would be highly destructive in their effects. Dentistry and dental education are making great strides forward in a logical and well-ordered program of progress. Dentists and physicians are working in closer coöperation than ever before, and this coöperation is steadily becoming more intimate. Dentists should know more about the basic "medical" sciences; physicians should know more about the mouth and teeth. Progress along all these lines is actively under way and will continue. Everybody, except Dr. Owre, recognizes these signs of evolution. Educational evolution widely and sanely directed, ***not revolution***, will bring about results of enduring value.

And now for Dean Owre's criticisms of the Council. He charges first that the Council is reactionary. If by "reactionary" he means that the Council disagrees with his own curious ideas concerning the destruction of the dental profession as such, with its impractical corollary of what he calls "education on varying levels," then the Council pleads guilty to the charge. Overwhelming majorities of practising dentists and physicians, and of dental educators and medical educators, would also be classified as reactionary for the same reason. If Dean Owre means that the Council is reactionary as being opposed to progress in dental education, his contention is false and cannot be proven by a single substantiating fact. The Council has always been a leading influence in the improvement of dental education. In some circles it has even been criticized as having been too progressive, and as a result it is at present being opposed by several politicians within the American Dental Association who have in the past felt the strong arm of the Council and who are taking this means of retaliation. In fact, an editorial by one of these politicians is quoted by Dr. Owre in his pamphlet in support of his contention that the Council is reactionary. The Council should derive some consolation from the fact

that Dean Owre likewise places the American College of Dentists and the American Association of Dental Schools in the same category as "reactionaries." Practically everybody seems to be out of step with the author of "Prunes or Pancakes."

Dean Owre, in the second charge, holds that the Council's activities are on the side of lower rather than higher standards in professional education. By implication, innuendo, misrepresentation, misleading and garbled statements, and by telling only half truths concerning the statements of individuals whom he has quoted, he has made the Council appear unworthy of the confidence reposed in it by honest men. Finding himself no longer in accord with his colleagues in the American Association of Dental Schools, many of whom were associated with him in the Dental Faculties Association of American Universities, he makes unfair statements concerning the integrity of the members of that group which should be promptly challenged formally. Both the Council and the American Association of Dental Schools have a full understanding of their problems and know that to solve them all will take many years of patient effort, courageous work, and sane leadership.

Dean Owre makes the general charge that the Council has given several unnamed low-grade schools an A rating, and has refused to raise the rating of two excellent schools from B to A. Any change in rating was made only after a most careful inspection or an examination into all the facts, or both, either by a Committee of the Council (which reported its findings to the Council for final decision) or by the Council itself. Any refusal to change a B rating to an A must have had similar good grounds. It has been the ambition of the members of the Council to encourage and aid the weaker schools so that all may soon become worthy to receive the A rating.

Dean Owre does make one specific charge which accordingly may be answered specifically. He complains that the rating of the School of Dental and Oral Surgery of Columbia University, of which he is Dean, has not been raised to A. The reply to this complaint is that this school has not received a re-rating because of the puerility and stubbornness of Dean Owre, who has been objecting to a reinspection of the school by the Council. Let me remind you of a sequence of circumstances. The School of Dentistry of Columbia University

was established in 1916. It endeavored to establish and maintain high standards. Because of its high entrance requirements it never enrolled many students, its maximum attendance before 1920 having been only four students, which was increased annually until in 1922–23 its total enrollment was only twenty. On July 1, 1923, this small school, which had not previously been rated by the Council because it was in a formative stage, was joined with the College of Dental and Oral Surgery of New York, a school which, owned by an independent corporation, had an attendance of over 600 students, and some months before had been rated class C—a rating that was not published because the merger created new conditions. The amalgamation of the two schools was brought about primarily by the influence of the Dental Educational Council of America, working through a specially appointed committee of the Council, which coöperated to that end with Dr . Wm. J. Gies, who was making the investigation and gathering the facts upon which "Bulletin 19" of the Carnegie Foundation was later written, and who in turn was informally helping the representatives of both the University and the School to effect the merger. On June 30, 1923, as a direct result of the constructive influence of the Council, which was formally recognized by the University's delivery of an important signed assurance to the Council's Executive Committee on that day, *property then publicly estimated by the University to be worth in the aggregate of $445,186 was transferred by this Class-C school to Columbia University*. On page 477 of the Carnegie Foundation's "Bulletin 19" the following terse statement is made, which no one, excepting perhaps Dean Owre, will question: "Through the direct intervention of the Dental Educational Council, independent dental schools have finally become extinct in the State of New York." Any impartial student of the situation might well question the propriety or good taste of Dean Owre's bitter criticism of the body that is thus credited in the Carnegie Foundation's "Bulletin 19" with this important achievement for the advancement of dental education in New York. The Council's reward for this public service has been abuse from Dean Owre, with never a word of appreciation or credit by him or his official associates.

The mere union of the two schools, however, did not justify disregard of the actual conditions. The original Columbia School, which

had been in a formative stage and not previously rated by the Council, was embodied in a school that, as stated above, had been rated Class C —the Class-C rating having been deliberately withheld to give the University unhampered opportunity to develop the school in the public interest. Much organization work remained to be done within the school. Later (1926), a year before Dr. Owre became connected with Columbia University, the Council was invited to inspect the school. After a thorough examination the Council decided by unanimous vote of the members present that the school, although it had risen from the Class-C grade, had not yet become worthy of the A rating, and a Class-B rating was given. Constructive suggestions were *privately* made for further improvement, which, however, had only the effect of angering the Dean and his associates. The school then made several written presentations to the Council, including various *prophecies*, upon which, according to Dean Owre, the Council was expected to change its rating from B to A. One of the standing rules of the Council very properly forbids a change in a rating, *under complicated conditions such as those in this case, without an inspection*, and a reinspection of the Columbia School by the Council has been repeatedly suggested. Dean Owre, assuming his customary controversial attitude, has tried by means of argument, pretense and bluster to secure the result he desired, and has indicated that the Council would not be permitted to inspect the school. Why the executive authorities of Columbia University should have allowed the testy ill-humor of the Dean to stand between the Dental School, and the Class-A rating that a reinspection at the new site would probably have warranted, is one of those things that is difficult to comprehend. That he has not already antagonized his immediate superiors in the University just as he has antagonized the dental profession of the City of New York, and most of his former friends in the American Association of Dental Schools, is beyond understanding.

The Dental Educational Council of America was organized in 1909 when the Dental Faculties Association of American Universities had held only a preliminary conference and had but six members, as contrasted with the forty-one members of the National Association of Dental Faculties, and hence no representation in the Council was offered at that time. In 1921, when the "Dental Faculties Associa-

tion" had acquired a total of eleven members, it was invited by the Council to seat three representatives in the Council. The invitation was promptly accepted. Dean Owre was one of the three representatives. When the American Association of Dental Schools was formed in 1923, by amalgamation of the existing associations of teachers and faculties, and representatives of the Association in the Council were nominated and elected in an open meeting of the entire membership, no one nominated Dr. Owre to succeed himself, and his service as a member of the Council was thus formally terminated by the unanimous preference of his colleagues. Concerning his services on the Council, the records show that he was in complete accord at that time. He acted on several inspection trips and voted to give the B (satisfactory) rating for at least one proprietary school which, despite its proprietary status, was nevertheless doing good work and was making an earnest attempt to reorganize on a non-commercial basis and to be affiliated with a university, and, in these efforts, was aided by the Council with an "acceptable" rating. Dean Owre condemns this vote today, but evidently overlooks his share in it. Shortly afterward this School was rechartered as a non-proprietary and philanthropic educational institution. A detailed public account of Dean Owre's activities while a member of the Council, and earlier during the period when he was invited by the Council to sit in as a representative of the Dental Faculties Association of American Universities, *when the services of the Council were utilized confidentially by the Surgeon General of the United States in 1918*, would make interesting reading, especially for his dental colleagues at Columbia University.

Dean Owre rails against commercial tendencies in the dental profession and is himself guilty of a flagrant form of commercialism by developing, in connection with his school, a "pay clinic" with which the dental profession in New York became promptly familiar, and also to which it formally objected. The reason Dean Owre has given to the newspapers for having established this "pay clinic" is that the dental profession of New York collectively is either unable or unwilling to do good dentistry for the citizen who can pay reasonable fees. By means of some magic formula the *poor dentistry* against which he makes such insulting complaints becomes *acceptable* dentistry by simple transposition within the four walls of his clinic in the Dental School of Columbia University.

During the past year, the Council has been the object of another attack which, if successful, would prove to be a severe blow to dental education in the United States. I refer to the action of the House of Delegates of the American Dental Association at the meeting in Memphis, on October 19, 1931, at the instigation of the Board of Trustees. This action would relegate the Council to the status of a sub-committee working under the Committee on Dental Education of the American Dental Association and responsible to that Committee. This resolution was undoubtedly passed without due deliberation and without a thorough understanding of the facts involved. Dr. S. W. Foster of Atlanta, the only member of the Dental Educational Council of America who is likewise a member of the Board of Trustees, and who might have explained to the Trustees the fallacy of the position they were taking, was prevented by illness from attending the meeting. If he had been present to discuss the question in its true light, I am convinced that the Trustees would not have been misled. The exact wording of the resolution as it relates to this matter follows: "That the Educational Council, from now on, function only in a sympathetic, advisory capacity, with no mandatory powers except to consider the advancement of ratings of any schools that might make application during the coming year. That the Trustees request the Educational Council to present a report to the Committee on Dental Education at a joint meeting of the Council and Committee before the next annual meeting."

The Council is an independent body, has its own constitution and by-laws, and cannot be placed in a position of subserviency by any one of the groups representing the three parent bodies. As you know, acting on the responsibilities of this independence, it decides its policies by majority vote of its own members. While it has always welcomed constructive criticism and suggestions for improvement, and given careful consideration to such suggestions, it should not submit to coercion from, or approve any arbitrarily destructive acts directed against it by, any of the parent bodies. Moreover, it is not at all clear what could possibly be gained for the public or for dentistry by stripping the Council of its advisory and coöperative functions in dental education, and leaving it only the duty of performing all of the work incident to its duties and reporting its findings for the final de-

cision of an intermediate body, the American Dental Association's Standing Committee on Dental Education. Why should one of the parent bodies represented in the Council assume supervision over the other two component groups? What justification can there possibly be for such action?

If the Board of Trustees and the House of Delegates have determined to ignore the many years of service of the Dental Educational Council of America, the logical action of the members of these bodies would have been to withdraw from the Council the American Dental Association's representation rather than to attempt to force the Council into a position of subserviency. The members of the Council may properly be expected to resist these aggressive tactics and to refuse to acknowledge the supervision of the said Committee, however highly they may regard these gentlemen personally. The argument that the Committee on Dental Education should control the activities of the Council because a very limited sum of money is voted annually from the treasury of the American Dental Association is not well founded. On the same premise, we would expect the Carnegie Corporation to exercise supervision over the activities and pass upon the final report of the Committee on the Survey of the Dental Curriculum. The former idea is just as pernicious as the latter.

The argument that the Committee on Dental Education should assume control over dental education because the work of the Council on Medical Education is done under the auspices of the American Medical Association is likewise illogical. There is no reason why dentistry should not have a better method. That the status of the Council is more representative of dentistry than that of the Medical Council is of medicine was made clear to us all by the Surgeon General during the war period. The present success of the work of the Council on Medical Education is based upon the prestige it has earned over a period of more than twenty-five years of continuous and well-supported effort, as well as upon the personal ability of its distinguished *full-time Secretary*, Dr. N. P. Colwell, now retired, and the fine work of his able successor, Dr. William D. Cutter. Then too, it must be remembered that the Medical Council has been given generous financial support by the American Medical Association for many years. The dental profession, in regulating the standards of dental education, de-

termined in 1909 to form a truly representative body which would represent directly not only the profession in general, but also the schools and the examiners in particular. The body thus created, the Dental Educational Council of America, has functioned continuously ever since, *but has been handicapped especially by lack of sufficient funds to employ a full-time executive secretary*. Despite this shortcoming, the Council has done a remarkably successful piece of work as evidenced by the very marked improvement of dental educational institutions and facilities. There is no good reason to terminate the constructive activities of this body by placing it in a position of subserviency. A Committee on Dental Education, regardless of the personal ability of its members, cannot easily build up over night the prestige and confidence that have been earned by the Dental Educational Council in its twenty-three years of service.

The Council, in its many years of work, has antagonized men who are, or have been, financially interested in proprietary post-graduate courses. The Council has been unable to approve post-graduate courses conducted outside of recognized, accredited dental schools. Dental education for personal profit has always been disapproved by the Council. It seems that these disgruntled persons, placed temporarily in positions of power in the American Dental Association, have succeeded in misleading enough trustees and delegates to accomplish their purpose. In this, these disgruntled persons have shown the same lack of judgment they exhibited in other matters, particularly dental advertising. The action that the House of Delegates took at Memphis on the question of dental publicity is another evidence of the recent failure of the system of representative government in the dental profession to reflect the will of those whom that government is intended to represent. I feel certain that the dental profession does not wish to go into the advertising business any more than it desires to aid certain individuals with an ax to grind to succeed in destroying the Council and, through this means, to help certain commercially minded men to go into the business of selling dental education for profit. Actions such as these have been causing the profession to lose confidence in the political philosophy of some of its leaders.

I have unbounded faith in the honorable intentions and sound judgment of the rank and file of dental practitioners, in their high ideals

and character, in their purpose to serve the people to the best of their ability. History has shown that when a great political or social evil is to be corrected, the best way to accomplish it is to go direct to the people. For the same reason, I believe that the Council, unless the action against it is rescinded, should immediately make a direct appeal to the dental profession, and explain to dentists generally that a group of their false leaders either through ignorance, selfish ambition, or greed are maliciously proceeding in a way that, if not checked, will inevitably lower the noble ideals and purposes of our profession, and cause irreparable damage to its educational institutions. Once aroused, the members of the profession will not allow an injustice to be perpetrated on the Council, any more than they will allow themselves to be hoodwinked by their impractical and radical leaders in the attempts to sell their professional birthright for gold by means of unethical, unprofessional advertising, to which disgrace I have already alluded. It is to be hoped that the new House of Delegates and the Board of Trustees will bring order out of what may develop into a state of chaos, by reflecting the honest opinions of those whom they represent, and that they will see fit to rescind the action taken in regard to the Council.

In my opinion, if any of the three component groups should be forced to take over the work of the Council, the body that could most logically do so would be the National Association of Dental Examiners. I make this statement because I have faith that the majority of the "Examiners" would never fail to remember that the source of all progress in dentistry is derived from the basic training given to dental students in dental schools, and that the attitude of the "Examiners" to dental schools, properly conducted as institutions of learning, will always be sympathetic and coöperative in character. Experienced members of state dental boards, as well as the members of this Council, have learned that it is through the helpful suggestion and sympathetic cooperation given to dental schools honestly striving and searching for better methods of teaching that dental education has received the greatest advancement. The "Examiners" are not likely to make excessive use of their powers, or to abuse them, or to exceed their specified functions, for they know that the results of such excesses are invariably harmful and retard progress within the profession. More-

over, they know that conference and persuasion, intelligently used in discussing different points of view, are far more helpful than the employment of arbitrary methods. From an experience of many years, I have come to the conclusion that the development of a spirit of cooperation, with lots of common sense and give-and-take thrown in, will yield better results for dental education than ill-advised legal enactments in the various states and their enforcement in a petty, nagging spirit. The educational high-tariff walls with which some states have surrounded themselves are sure to provoke retaliation, and the thoughtful, experienced state board examiner is the first to condemn this short-sighted policy.

The members of the National Association of Dental Examiners represent the law of the states relating to dentistry, and in the performance of their duties acquire an intimate knowledge of the shortcomings as well as the commendatory points in our system of dental education. When the Committee on the Survey of the Dental Curriculum brings in its report, the "Examiners," if put in control of the activities of the Dental Educational Council, could be relied on to give whatever plans might be suggested an unprejudiced, fair trial. *While I do not favor* the withdrawal from the Council of the representatives of either the American Dental Association or the American Association of Dental Schools, and placing the control of the Council solely in the hands of the National Association of Dental Examiners, I repeat that such a step would be much more logical and much more conducive to the welfare and progress of dental education than to permit the Council to become a political football of the American Dental Association.

If you agree with the view I have expressed, I suggest that a committee of the Council be appointed to draft suitable resolutions, to be submitted to the Board of Trustees, or to the House of Delegates, or both, asking these bodies to rescind the action taken against the Council at the Memphis meeting of the American Dental Association.

In closing this statement, let me admonish you, as members of this important body, to do all in your power to preserve the good that has been accomplished, and to repel as vigorously as possible any ill-advised attacks on our organization, in order that the Council may continue to function in the future as in the past, to the end that its

lofty ideals for dental education may be realized. Especially at this time of stress and strain, when every honest man is endeavoring to find a solution for his problems, is the dental profession looking to us for guidance and coöperation, and for the advancement of sound educational policies. Confusion in our professional curriculum is about to be eliminated, sound educational policies with no taint of commercialism will continue to be enforced, and increasing graduate study and research will help to clarify controversial questions both in diagnosis and methods of practice. In all these matters, the dental profession may rely upon the continued constructive thought and coöperative leadership of the Dental Educational Council of America.

Addendum

The foregoing address stated some objections to unwarranted action, relating to the Dental Educational Council, at the annual meeting of the American Dental Association at Memphis, in October, 1931. At the meeting of the House of Delegates of the American Dental Association, at Buffalo, on September 15, 1932—six days after the delivery of the foregoing address—Dr. F. M. Casto, Dean of the Dental School of Western Reserve University, acting as chairman of the Reference Committee on Amendments to the Constitutional and Administrative By-laws, presented for his committee the following resolution:

"WHEREAS, at the meeting of the American Dental Association held in Memphis in October, 1931, the House of Delegates adopted the following resolution:

" 'That the Educational Council, from now on, function only in a sympathetic, advisory capacity, with no mandatory powers except to consider the advancement of ratings of any schools that might make application during the coming year. That the Trustees request the Educational Council to present a report to the Committee on Dental Education at a joint meeting of the Council and Committee before the next annual meeting;' and

"WHEREAS, it is the sense of this body that the said resolution was passed without due deliberation and is not in the best interest of progress in dental education; be it therefore

"RESOLVED, that the said resolution be hereby rescinded."

The House of Delegates thereupon voted to request the Trustees of the American Dental Association to make this resolution effective.

An appropriation in support of the work of the Council was voted (by the Trustees). The Committee on Dental Education nominated Dr. W. T. Chambers, of Denver, to succeed himself for a term of three years, as one of the three delegates in the Council from the American Dental Association. This nomination was ratified by the House of Delegates. The National Association of Dental Examiners, at its annual meeting in Buffalo about the same time, adopted resolutions strongly endorsing the Council and pledging the Association's continued support. The Dental Educational Council now consists of nine members—three delegates each from the American Dental Association, the National Association of Dental Examiners, and the American Association of Dental Schools.—*Albert L. Midgley, Secretary of the Dental Educational Council.*

AMERICAN CONGRESS OF PHYSICAL THERAPY

Section on Stomatology

ALFRED J. ASGIS, Sc.B., M.A., D.D.S., F.A.S.S.

Chairman, Section on Stomatology, American Congress of Physical Therapy

The recognition of the dental profession as a branch of the healing art, assigning it a status of equality with the other medical and surgical specialties, was made known at the last meeting of the American Congress of Physical Therapy at its eleventh scientific session, in New York City at the Hotel New Yorker on September 6 to 9, 1932. This took place on the occasion of the announcement of the official establishment of a Section on Stomatology for the first time in the history of American physical therapy. The scientific program of the new Section, which occupied the entire day of September 9, consisted of contributions exclusively by dental surgeons. It was a true manifestation of the potential strength of our profession in scientific endeavor.

The creation of a dental section is significant not only to the dental profession in America, but also to practitioners in other countries. It demonstrates that our specialty is progressive and assertive, and has been finally given its deserving place in the realm of American medicine. Dental surgeons realize that physical therapy opens new channels for observation, study, investigation, and advancement in clinical oral therapeutics. *The Archives of Physical Therapy*, the official journal of the Congress, editorially speaks of the achievements and future possibilities of dentistry in physical medicine in very convincing terms, as follows (September, 1932):

"It is realized that the nature of disease, its causal factors, its aberrations, variations and patho-physiologic changes, is based upon scientific premises applicable in a general sense to all living structure, be that the stoma of entrance or exit. The logic of this fact is so obvious to contemporary students of medicine and related practices that both have looked with favor

on such efforts as would successfully bring about a state of unity, understanding and coöperation between them. . . . .

"Progress in stomatology has reached a stage of such importance that dignified recognition has been accorded to it by scientific medicine. Within its field it has supervision over important centers of health, and these in turn are subject to infective, toxic and mechanical factors which control the vitality, health and morbidity of the individual. Light, heat, massage, manipulation and electrosurgical procedures have been found to play an important rôle in the health equation of the individual. The value of these agencies to oral disease has already been demonstrated on a scale sufficiently large and intriguing to call for its recognition under organized and orthodox auspices. . . . .

"The purposes and desirability of the foregoing section are manifold. It will stifle and discourage the possibility of new cults to thrive in anarchistic, unethical competition with organized and scientific bodies. Under its own intelligent and regulated supervision it will have full autonomy to develop contribute and evaluate physical procedures in relation to oral practice. It would well act as a liaison between physical medicine and dental and oral surgery. . . . ."

The American Congress of Physical Therapy is composed of outstanding men in medicine, surgery, and the medical and surgical specialties. Its recognition of dentistry as the equal of other fields of health service, is an epoch-making event in our professional history. It is worthy of mention that for over a decade, physicians have been active in the development of physical means in the treatment of general disease, although little has been done in the oral region. This field was naturally left for dentists to develop, and we find dentistry marching onward with scientific physical medicine.

The sessions of the Section on Stomatology were well attended. Every phase in the physical treatment of diseases of the mouth, teeth, and adjacent structures was represented on the Section's comprehensive and scientific program. The subjects included ultra-violet ray, infra-red ray, diathermy, electro-surgery, and other branches of medical electricity as utilized in the diagnosis and treatment of mouth diseases. Scientific papers were read by Prof. Leo Winter, on Physiotherapy: its application in post-operative surgical conditions; Prof. Louis V. Hayes, on Diathermy treatment of some mouth lesions; Dr. Alfred T. Rasmussen, on Physical methods of diagnosis and treatment in the

practice of stomatology; Dr. Irving Salman, on Advantages of physical therapy as an adjunct in the treatment of oral fractures; Dr. E. Lester Jones, Jr., on Ray therapy of mouth tumors; Dr. John F. Murphy, on Fundamentals of heliotherapy in clinical dentistry; Dr. Isaac L. Folstein, on Ultra-violet treatment in oral disease and periapical abscesses; Dr. Irene G. Woodcock, on Preventive and prophylactic values of heliotherapy in the practice of children's dentistry; Dr. Alfred J. Asgis, on Electro-surgery in the treatment of diseases of the mouth; and Prof. Frederick W. Lake, on the Application of ultra-violet light in oral lesions.

Dean Allen T. Newman, of the New York University College of Dentistry, participated in the general educational conference of the Congress on Tuesday, September 6, by presenting a most illuminating paper on The teaching of physical therapeutics in the dental school curriculum. This was followed by two reports presented by the Section on Stomatology. The educational report, on The present status of physical-therapy practice and education in dentistry in America, showed that about 33 percent of the dental schools in the United States give instruction to undergraduate dental students in the modern methods of physical therapy. This preliminary report was prepared by the Committee on Education and Clinical Practice composed of Drs. Alfred J. Asgis, *Chairman*, Harry Moss and Robert J. Reade (Canada). The second report, on The stomatologic case-record in physical-therapy practice, illustrated with a series of records, was presented by Drs. Alfred J. Asgis and E. Lester Jones.

The future development of oral physical therapy, and the success of this Section in effectively carrying out its planned program, depend on the coöperation of the dental profession and the dental schools. The Section invites the coöperation of all dentists interested in physical therapy, and hopes that by such common effort it will be able to record another outstanding epoch in the history of American dentistry and medicine.

310 West 72nd Street,
New York City

ARTIFICIAL HYPEREMIA IN DENTISTRY BY MEANS OF THE ELLIOTT HEAT MACHINE

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The efficacy of heat in the treatment of inflammatory dental diseases, and for the relief of pain, has long been recognized by the dental profession. From the physiologic point of view, inflammation is not a disease, but rather a local defense by the tissues against deleterious invasion. When we produce artificial hyperemia, we aim to augment this beneficial inflammatory reaction—the tissues become red, swollen, relaxed, and the quantity of blood therein is greatly increased. Hyperemia may be induced by the application of bandages or binders, by the use of suction, and by the application of heat.[1] Bandages or suction would be difficult to apply in the oral cavity, and even the use of heat has been restricted because of the difficulty in controlling the temperature and in securing close contact with the diseased area. In the past, use of heat has been limited to the mechanical possibilities in poultices, hot-water bags, and electric pads. By means of the Elliott Heat Machine, however, it is now possible to apply heat of a known and controlled temperature to the various orifices of the body. This device was originated by Dr. Charles Robert Elliott. According to reports by Drs. Holden and Gurnee,[2] it has been used to considerable advantage in vaginal work. In their work at Bellevue Hospital, the heat machine was used to hasten the formation of pus in pelvic abscesses, but resolution took place instead. In the treatment of gonorrhea of the female genital tract, the apparatus was found especially helpful because the heat necessary to kill the gonococci (122°F. for 10 minutes) affected the many glandular crypts

[1] Hyperemic treatment of Bier: Meyer, W., and Schmieden, V.; 1908; W. B. Saunders Co., Philadelphia

[2] A new method of applying vaginal heat: F. C. Holden, M.D., and W. S. Gurnee, M.D.; *American Journal of Obstetrics and Gynecology*, 1931, xxii, p. 89; July.

that harbored the bacteria, and which resisted other methods of treatment. In all cases in which they used the apparatus, recovery was more rapid than previously had been customary.

In view of these successes we felt that there might be some value in using the apparatus as an adjunct, if not as the sole therapeutic agent, in the treatment of various inflammatory diseases common to the oral cavity. During the past year we used this apparatus in the treatment of occlusion of the parotid duct, pericoronal abscess of the third-molar region, periodontal abscesses, periodontoclasia, Vincent's gingivitis, and post-extraction pain. In all but one of the cases in which pain was present at the beginning of the treatment, the pain was eliminated before the treatment was concluded. In this one case the patient stated that the pain was less severe. In Vincent's gingivitis, smears taken immediately following treatment showed marked diminution in the number of fusiform bacilli and of Vincent's spirillae. Unless other methods of treatment were also employed, however, the bacteria returned in a few hours. The smears were interpreted as negative, one plus (+) where only a few of the characteristic bacteria were found, four plus (++++) where they were found in masses, and two plus (++) and three plus (+++) for two intermediate stages.

The apparatus consists of small distensible rubber bags through which water is circulated at a known temperature of 115° to 120°F., increasing to 132°F. at the rate of 0.75°F. per minute (*fig. 1*). The rubber applicator is placed in contact with the diseased area. Electricity provides the heat and the pressure. Application of the maximum heat for a period of twenty minutes produces marked hyperemia, which continues for some time after the treatment is completed. There seems to be no additional advantage in longer treatments. The patient does not experience any particular discomfort from the high temperature, and there are no objectionable after-effects.

For postoperative pain and periodontal abscesses, the Elliott Machine was successfully used as the sole agency. In Vincent's gingivitis and in periodontoclasia, we feel that the return to normal was expedited by the beneficial effects of the hyperemia. The results in the thirty-five acute cases in which we used the apparatus indicate that it may be a valuable adjunct to the usual medication, instru-

mentation, and home care. The following cases are typical of those treated.

Report of some typical cases treated with the Elliott Heat Machine

Case I. Mr. H. F. Age 36. Male. Colored. 7–22–31.—Acute Vincent's gingivitis with pain. Smear +++. 7-22-31.—E. H. M. for 20 minutes at 130°. Pain disappeared. 7–23–31.—E. H. M. for 20 minutes

FIG. 1. ELLIOTT HEAT MACHINE; SHOWING USE, WITH RUBBER APPLICATOR IN CONTACT WITH DISEASED AREA IN PATIENT'S MOUTH

at 130°. Following treatment, gross deposits removed with instruments. Smear +++. Ulcers on cheek and tongue healing. 7–25–31.—Smear +++. Appearance of tissue improved. E. H. M. for 20 minutes at 130°. Smear +. Applied salvarsan and glycerine 10 percent with applicators. 7–27–31.—Smear +. Applied salvarsan and glycerine with instruments. 7–30–31.—Smear negative. Tissues nearly normal. 7–31–31.—Smear negative. Patient dismissed with instructions to return if mouth became inflamed or tender. ℞: H_2O_2 as mouth wash five times daily.

Case II. R. C. Age 25. Male. White. 7-28-31.—Acute Vincent's

gingivitis. Smear +++. E. H. M. for 20 minutes at 130°. Smear following treatment +. General appearance of mouth greatly improved. 7–30–31.—Improved. Smear +++. E. H. M. for 20 minutes at 130°. Smear following treatment negative. 7–31–31.—Improved. Smear +. Deposits removed. Instruction in home care given. Salvarsan and glycerine applied. 8–3–31.—Improved. Smear negative. Salvarsan applied with instruments. 8–6–31.—Mouth appeared normal. Smear negative. Patient dismissed.

Case III. V. R. Age 24. Male. White. 7–21–31.—Periodontal abscess around upper right central. E. H. M. for 10 minutes at 132°, using small applicator. Pain disappeared and swelling subsided. No further treatment.

Case IV. B. M. Age 42. Female. White. 8–3–31.—Occluded parotid duct, swollen left cheek, four days' duration. Patient had been biting cheek at opening of duct. E. H. M. for 25 minutes at 132°. Swelling partially subsided. Pain relieved. 8–6–31.—Appearance normal. No pain. E. H. M. for 20 minutes at 132°.

Case V. Prof. H. 3–3–32.—Inflamed lower right third-molar region. One week duration. E. H. M. for 15 minutes at 132°. 3–5–32.—Improved. E. H. M. for 20 minutes at 132°. 3-9-32.—Tissues normal in appearance and patient comfortable.

Case VI. E. A. Age 41. Female. White. 4–9–32.—Painful lower right first molar socket following extraction one week previous. E. H. M. for 20 minutes at 132°. Pain relieved. 4–12–32.—Improved, only slight pain. E. H. M. for 20 minutes at 132°. 4–15–32.—Healing normal. Patient comfortable.

A STUDY OF THE LIABILITY, TO DECAY, OF THE DECIDUOUS TEETH OF SCHOOL CHILDREN[1]

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Introduction. Dental literature shows a marked recent increase in the number of articles pertaining to dentistry for children. There is an increasing demand for essayists and clinicians on the subject of pedodontia. There is a gradual awakening of our profession to the importance of, and necessity for, adequate dental service for our child patients. Please note the expression just used: "*adequate* dental service for our child patients." The day is rapidly approaching when the public will *demand* dental service for the little ones. When that day comes, let us hope that our profession will be prepared to meet this demand with *adequate* service. One of the most disheartening obstacles to be overcome by public health workers is the indifference of too many members of our profession to the dental needs of children, even when such needs are pointed out to them. The recent barometric "low" in business activities has resulted in *some* good. High priced restorations having failed to interest adult patients, more attention has been given to the junior side of dental practice.

It does not seem logical that any dentist would refuse work. What is the explanation for the apathy and indifference on the part of some of our profession? Possibly it is due to the very evident deficiency, at the colleges, in the handling of child patients and in the necessary modification of operative technique. It should be very encouraging to our Society to find our dental schools *beginning* to recognize this deficiency in the curriculum, and to take measures to remedy it. What of the man who graduated ten or more years ago? Text-books?

[1] A preliminary report. Read by title at the tenth general meeting of the International Association for Dental Research, Columbus, Ohio, March 19–20, 1932; *Journal of Dental Research*, 1932, xii, p. 516. Presented at the annual meeting of the Association for the Promotion of Dentistry for Children, Buffalo, N. Y., September 12, 1932.

Yes. In all the literature of dentistry we have, I believe, but three recognized books dealing with dentistry for children. A few of our more modern text-books on operative dentistry give brief notice of the fact that children do have teeth. One excellent text on dental anatomy of recent origin nonchalantly dismisses the entire deciduous dentition in five pages of a total of three hundred. We cannot wonder at the lack of attention to this subject in the dental curriculum, nor at the dearth of informative literature relating to it, when we consider that both colleges and authors are faced by the same great difficulty—the deficiency of acceptable data in regard to the deciduous teeth. We are groping our way through uncharted waters and, like the cautious pilot, should repeatedly take "soundings." This brief paper, a preliminary report, does not relieve the dilemmas of either the authors or the colleges. It is one of a series of "soundings," which like those of the mariner must be oft repeated and carefully verified.

The absolute futility of attempting to correlate the numerous public-health dental-reports issued from various sources in this country and abroad, because of their lack of standardized examination technique, has been repeatedly demonstrated. Great care has therefore been exercised in securing and preparing the data used in this paper, so that any one may repeat the work in exactly the same manner as that outlined here.

Procedure. The *examiners* were thoroughly experienced dental hygienists, carefully instructed for this work and under strict supervision. Four groups of hygienists were utilized; some were Health Department workers; all were under strict supervision of a capable dentist. Each examination was checked by another worker (hygienist or dentist) for verification. Charting was done at the chair following a cleansing. *Type of examination.*—This was a Walker Class II,[2] modified by absence of magnification. To state this more definitely: the examination was made under "good" to "excellent" light, following thorough prophylaxis. Dryness was assured by the use of cotton. The instruments were a good mouth mirror and a sharp explorer of the type of the #17 S. S. White. No magnifying lenses were used. *Source of material.*—Children of almost every race that inhabits New York City were included, from the poorest sections to the better-class

[2] Walker: *Dental Cosmos*, 1930, lxxii, p. 284; March.

homes; from pre-school to high school. No nationality, sex, nor economic status predominated, although this report is based on females only. Whether there are any differences due to sex, cannot yet be stated. Neither private- nor parochial-school children were included. I desire to express, to the Chief of the Dental Division of New York City, Dr. Harry Strusser, my sincere appreciation of his kindness and helpfulness in allowing me to secure some of my data through his Division. His coöperation made possible the examination of some of the grades used in this study. *Methods of recording.*—All detectable pits and fissures, carious cavities, badly decayed and missing teeth, were noted, as well as the surface location of defects. A "badly decayed" tooth was one in which caries had so far progressed as to involve all or most all of the coronal portion, and more than one surface. Separate cavities on a surface were recorded separately, for several cavities may occur on one surface. It may be necessary for the dentist to join these cavities into one, but they were separate cavities at the time of examination —a hygienist *records* but does not *diagnose*. The data on the record cards were transferred to a master sheet such as is used in our Child Research Clinic at New York University. This master sheet facilitates a very detailed record of each tooth, surface, and condition. From these large sheets, the final statistics were compiled.

Results. The material was gathered, recorded and compiled with no preconceived theory to be proved, nor dogma to be upheld. The compilations, I believe, are as nearly mathematically correct as approved methods and aids can make them. From three to four checks as to their accuracy were made by the system used. Bias could not and did not enter into the work. The presentation of this material follows the logical sequence of tooth and then surface; and where "tooth" or "teeth" appears, *deciduous* teeth are meant, unless otherwise stated.

Our first question is: which teeth are most liable to caries? In considering caries liability of deciduous teeth, we have a more difficult problem than for the permanent teeth because of the factor of exfoliation. To eliminate this variable, the caries liability was worked out in percentage of the *remaining* defective teeth. *Table 1* shows the average percentage of caries per defective tooth over a period of six years—from the age of 6 to 11. The data in *table 1* should not be regarded as indicating the individual liability, to caries, of any tooth

at a specific age. *Table 1* shows the average liability over a period of time. Thus, tooth G (upper left lateral incisor), at the age of 6 is 80 per cent perfect, and at 11 is 99 per cent missing, but its average liability during the age period of 6 to 11 is 5 per cent. The data in this table indicate that there is a bilaterality of defects in the deciduous teeth, as Dr. Hyatt has shown for the permanent teeth. This bilaterality was also confirmed by a survey made by the New York City Department of Health, although their tables were limited to the molar teeth.[3] From this table we also note that the teeth of highest liability are the molars. Our clinical impressions sometimes lead us to believe

TABLE 1

Average percentage of defects per tooth over a period of six years, ages 6 to 11; defective teeth only

	TOOTH	PERCENT	PERCENT	TOOTH	
UR	2M	53	49	2M	UL
	1M	29	30	1M	
	Cu	10	12	Cu	
	L	5	6	L	
	C	4	4	C	
LR	2M	47	45	2M	LL
	1M	36	36	1M	
	Cu	7	7	Cu	
	L	0.5	1	L	
	C	0.3	0.2	C	

that the anterior teeth are more liable to caries than is actually the case. Possibly this arises from the fact that the operative problem is usually more difficult of solution in the deciduous anterior teeth when we find them broken down.

Some of the complications brought about by the factor of exfoliation are illustrated in *summary A*, below. This *summary* shows a perfectly logical progression. Although it relates only to tooth A (upper right second molar), it applies equally to each of the other teeth. The ratio between defective teeth and remaining teeth is almost a constant.

[3] *Weekly Bulletin*, N. Y. C. Dept. of Health, 1932; Feb. 20.

(*A*) *Perfect, missing, defective, upper second deciduous molars, according to age*

Age	Perfect *per cent*	Missing *per cent*	Defective *per cent*
5	22	2.0	76
6	25	1.9	73
7	23	4.0	73
8	18	14.0	68
9	4	44.0	52
10	8	58.0	34
11	4	77.0	19

As the deciduous molar teeth, like the molars of the permanent dentition, are by far the most liable to caries, let us inquire as to the surface liability. Of all defective lower second molars, at the age of 5, the highest percentage of defects occurs on the occlusal surface—approximately 65 per cent. In this same age group, 38 per cent of the lower second molars are already badly decayed. On comparing the liability of different surfaces of different teeth to be defective, the occlusal surfaces of the upper molars are found to be more than twice that of the mesial surface of the upper central incisors. This proportion increases with the age of the child. At 6, there are over six times as many defects on the occlusal surface of the upper second-molars as on the mesial surfaces of the central incisors. At 7, the occlusal surface is almost sixteen times as liable. Again the factor of exfoliation complicates the problem, these figures having been recorded for teeth that remain at those ages.

In considering the defective surfaces of the *upper* second-molars at 5, 6 and 7 years, defects are located as shown in *summary B*, below.

(*B*) *Location of defects in defective upper second deciduous molars*

Surface	5 yrs. *per cent*	6 yrs. *per cent*	7 yrs. *per cent*
Occlusal	56.0	78	51
Mesial	17.0	13	26
Distal	5.0	2	2
Lingual	14.0	4	8
Buccal	0.9	0	0
M—O	5.1	2	9
D—O	2.0	1	4

The increased percentage of mesial caries probably is reflected in the reduction in the percentage of occlusal defects. A very significant fact is the finding that the liability to distal caries on the deciduous second molars is very low. The picture for the *lower* molars is only slightly different. As in the adult dentition, the principal change occurs in the increased liability of the buccal surface (*summary C, below*).

(*C*) *Location of defects in defective lower second deciduous molars*

Surface	5 yrs. *per cent*	6 yrs. *per cent*	7 yrs. *per cent*
Occlusal	65	74	68
Mesial	14	17	13
Distal	3	4	2
Lingual	0	0	0
Buccal	5	2.5	0
M—O	10	2.5	14
D—O	3	0	3

Again we note the preponderance of occlusal defects, the number of mesial defects, and the almost negligible number of defects, on the

TABLE 2

Comparison of the distribution of defects in deciduous second molars and in permanent first molars

SURFACE	UPPER		LOWER	
	Deciduous	Permanent	Deciduous	Permanent
	percent	*percent*	*percent*	*percent*
Occlusal	63	81.0	69	72.6
Mesial	24	10.0	15	7.5
Distal	2	3.2	3	3.3
Lingual	6	22.5	0	1.2
Buccal	0	3.1	3	35.1

distal surface. This group of figures (*summary C*) has been purposely limited to the 5-, 6-, and 7-year groups, to avoid as much as possible the factor of premature exfoliation or loss through extraction. More than 300 cases were used in this grouping.

Table 2 facilitates comparison of our average percentages for the 5-, 6-, and 7-year groups with similar data, relating to *permanent* teeth

(16–20 years), from statistics obtained by Dr. T. P. Hyatt (not yet published). The outstanding differences between the two dentitions are the greater proportion of mesial defects in the deciduous teeth, and of lingual and buccal defects in the upper and lower permanent teeth, respectively.

In the deciduous dentition there is a much greater difference between the first and second molars than in the permanent teeth. The anatomical forms of the two teeth are markedly different, as are also the caries liabilities. The first deciduous molar is not nearly so prone to decay as is the second, and it is very much less likely to have structural defects such as pits and fissures. Data relating to the deciduous first molars, similar to those for the second, are given in *summary D*, below. In the first molar, both upper and lower, the distal defects are the most conspicuous, this preponderance continuing as long as there are any first molars. Possibly this is due to the fact that the first molars are usually more or less dome shaped, lacking in pits and fissures, and therefore non-retentive of food or bacterial plaques, whereas their occlusal surface is comparatively smooth, their sloping sides tending to pack food debris between the first and second molars.

(*D*) *Liability of specific surfaces of deciduous first molars*

Surface	Upper			Lower		
	5 yrs. *per cent*	6 yrs. *per cent*	7 yrs. *per cent*	5 yrs. *per cent*	6 yrs. *per cent*	7 yrs. *per cent*
Occlusal	17	25	20	33	27	20
Mesial	25	17	14	9	3	11
Distal	42	48	43	34	48	34
Lingual	0	0	0	0	0	0
Buccal	0	0	0	4	0	0
M—O	5	4	3	0	4	5
D—O	11	6	20	20	18	30

The deciduous cuspids show a greater liability on their distal surfaces, as do the permanent cuspids. In the upper incisors, the greatest liability is on the mesial surfaces. This is specially noticeable in the upper lateral incisors, where the mesial surface is over six times more liable to caries than the distal surface at the age of 6—just prior to exfoliation. The six lower anterior teeth have the highest degree of

"immunity," as is true also of the permanent dentition. The largest number of carious cavities found in any one mouth in our examinations was 36—in a girl six years old, one in a group of 2000. Fortunately such extreme cases are rare.

This work is in progress. Any suggestions, or corrections of the methods employed, would be very welcome. It is the author's sincere hope that this preliminary report may stimulate similar work elsewhere. The car you drive could never have been built, if an accumulation of acceptable facts had not been at the service of the engineers and designers. To give adequate dental service to our child patients, we must have facts not fancies on which to build.

THE USE OF NUPERCAINE IN EXODONTIA, WITH REPORT ON ITS TOXICITY FOR EXPERIMENTAL ANIMALS

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INTRODUCTION

Nupercaine,[1] a synthetic local anesthetic chemically unrelated to procaine, has been used in medicine for spinal, infiltration, and topical anesthesia. Few references have been made to its use in dentistry. *Dobkowsky* (3) reports excellent results with the use of 0.1 percent solution of nupercaine for infiltration anesthesia, and 0.2 percent to 0.25 percent solutions for mandibular injection; and considers 0.25 percent nupercaine to be equivalent to 4.0 percent procaine. He claims to have noticed a somewhat slower onset of anesthesia with nupercaine, but apparently a longer duration, as compared with procaine; and no ill effects from its use. A 3.0 percent solution was found very satisfactory for the production of topical anesthesia. *Grabner* (7), experimenting with various concentrations of nupercaine and epinephrine, found that 0.15 percent and 0.2 percent nupercaine solutions gave good results for infiltration and conduction anesthesia, respectively. Although no accurate records were kept, it was observed in a few cases that anesthesia lasted between 2.5 and 6 hours. No ill effects were reported, excepting vertigo in a few cases; this was attributed to the epinephrine. *Elzner* (4) injected a large number of patients with different concentrations of nupercaine and epinephrine, keeping records on both onset and duration of anesthesia. He recommends the use of 2 cc. of 0.2 percent solution with epinephrine, noting that onset of anesthesia occurred in five to seven minutes after infiltration, and in twelve to fifteen minutes after mandibular injections. Anesthesia lasted from two to twenty hours; average, five to six hours. He records no deleterious results attributable to the nupercaine, and

[1] Alpha-butyl-oxycinchoninic acid, diethyl-ethylene-diamide hydrochloride. It is known in Europe as "Percain."

states that very few patients complained of pain from the injection. A 2 to 3 percent nupercaine solution was used for topical application. *Fischer* (5) found a concentrated solution of nupercaine useful for pressure anesthesia of the dentin and pulp. To produce anesthesia for the extirpation of pulps, he employed a 0.3 percent solution for both infiltration and conduction anesthesia. It was occasionally necessary to wait sixty or ninety minutes to obtain complete anesthesia of the dentin and pulp. The duration of infiltration anesthesia averaged four hours; of conduction anesthesia, eight hours. For topical anesthesia he used a 2.0 percent solution containing epinephrine, as well as a 1.0 per cent and 2.0 percent nupercaine ointment. No extractions were performed.

TOXICITY REPORT

The literature does not contain a satisfactory report on the comparative toxicities of nupercaine and procaine; therefore, we determined it for ourselves, in terms of the *subcutaneous* minimal fatal dose for guinea-pigs, cats, and dogs, believing that subcutaneous administration more closely approximates clinical conditions than does intravenous or intraperitoneal injection. The strength of the solutions used was five times that employed clinically; i.e., 1.0 percent nupercaine in saline and 10.0 percent procaine in water. These concentrations were chosen to reduce the amount of solution injected. Theoretically, to obtain a true comparison of the toxicities, equal volumes of the two solutions must be injected, so that the area of absorption is the same for both. They should also be of the same osmotic concentration, to equalize the rate of absorption. These factors, however, cannot be controlled. Care was taken to deposit the solution *immediately* beneath the skin, especially in the case of guinea-pigs. A long, slender needle was employed so that, on withdrawal, none of the liquid would escape. We selected as the M.F.D. the smallest amount that would kill practically all the animals.

1. *Toxicity for guinea-pigs.* Gessner and Nauheimer (6) reported that the M.F.D. of nupercaine for guinea-pigs was 8 to 9 mg. per kg., and for procaine 450 mg. per kg., nupercaine appearing to be fifty times more toxic. On rats, however, these authors found nupercaine to be only seven to eight times more toxic than procaine. We were unable to confirm the results of Gessner and Nauheimer. Even 20

mg. of nupercaine per kg. injected subcutaneously killed only one in five guinea-pigs; whereas 25 mg. killed all. This dose is somewhat higher than the figure reported by Bond and Bloom (2) from this laboratory (20 mg.), possibly owing to seasonal and other variations. Considerable difficulty was experienced in obtaining the M.F.D. for procaine, as the following protocol will show.

Procaine	*Mg. per kg.*	*Lived*	*Died*
	450	4	0
	475	3	2
	500	4	1
	525	2	3
	550	4	1
	575	4	1
	600	3	2
	625	4	1
	650	1	2
	700	0	5

Apparently, in the case of procaine, there existed a balance between the rate of absorption and the detoxication of the drug. The difference between our M.F.D. of 700 mg. and that of Gessner and Nauheimer (450 mg.) may be due to the differences in concentration of the solutions used, and in the age of the animals. Gessner and Nauheimer (6) report the average body-weight of their cavies as 190 gm.; ours ranged from 350 to 600 gm. Roth (13) places the M.F.D. of procaine for guinea-pigs at 600 mg. per kg.—100 mg. less than ours. According to our results, then, nupercaine is at most only twenty-eight times (700/25) more toxic than procaine for guinea-pigs, when administered subcutaneously.

2. *Toxicity for cats.* The subcutaneous M.F.D. of nupercaine for cats has been determined by Lipschitz and Laubender (11) to be 15 to 20 mg. per kg. Our protocol shows that it is approximately 25 mg. per kg.

Nupercaine	*Mg. per kg.*	*Lived*	*Died*
	15	1	0
	20	2	0
	25	1	7
	30	0	4

Schmitz and Loevenhart (14) report the subcutaneous M.F.D. of procaine for cats as 450 mg. per kg. We have found it to be somewhat higher (550 mg.).

Procaine	*Mg. per kg.*	*Lived*	*Died*
	375	2	0
	400	2	1
	425	5	0
	450	3	2
	475	3	2
	500	3	0
	525	2	1
	550	0	5

Our results suggest that nupercaine is twenty-two times (550/25) more toxic than procaine for cats.

3. *Toxicity for dogs.* The M.F.D. of nupercaine for dogs has been determined by Bond and Bloom (2) to be 25 mg. per kg. subcutaneously. We have been unable to locate any reference to the fatal dose of procaine subcutaneously in dogs. Biberfeld (1) reported that 250 mg. per kg. subcutaneously was *not* fatal, although Hirschfelder and Bieter (8) have erroneously quoted him as stating that this is the fatal dose. Our results give a much higher figure (525 mg.). The solution was injected subcutaneously in two places, owing to the large quantity employed.

Procaine	*Mg. per kg.*	*Lived*	*Died*
	375	1	0
	400	1	0
	450	1	1
	475	1	0
	500	1	6
	525	0	5

For dogs, nupercaine, then, is twenty-two times (525/25) more toxic than procaine.

Keyes and McLellan (9) suggest that, for man, the absolute toxicity of nupercaine is about twenty times greater than procaine, an estimate that agrees well with our determinations on cats and dogs. They believe that 30 cc. of a 0.2 percent solution is the maximal therapeutic

dose (caudal anesthesia). This amount is far above that which might be used for exodontia. However, since the concentration of the solution of nupercaine (0.2 percent) is 1/10 that of procaine (2.0 percent), the relative toxicity of nupercaine as used by us is only twice that of procaine. This higher relative toxicity of nupercaine is compensated by its greater efficiency as an anesthetic agent. Nupercaine is apparently rapidly eliminated or detoxified by the body (2).

CLINICAL REPORT

Nupercaine solution was made as follows: Nupercaine hydrochloride was dissolved in 0.9 percent saline to make a 0.2 percent solution, which was sterilized by boiling. Nupercaine is a relatively stable compound not destroyed by boiling or long standing, if the pH is below 6.5. Occasionally a slight turbidity appeared in the solution, disappearing on addition of a few drops of 1 percent hydrochloric acid. This turbidity is due to the formation of the insoluble base when the reaction is alkaline, addition of this small amount of acid changing the base to the soluble salt. The acid has the further advantage of preventing oxidation of epinephrine, which occurs in an alkaline medium. However, care should be taken not to add more acid than is necessary; excessive acidity of the solution causes local irritation on injection. After cooling, fourteen drops (0.7 cc.) of 1:1000 solution of epinephrine hydrochloride were added per 30 cc. of nupercaine solution. The procaine used in Experiment 1 was a standard 2.0 percent solution in ampules containing epinephrine, 1:50,000.

The experiments were conducted on three groups of patients: Group 1, ten dental students; Group 2, 54 negro patients of both sexes presenting for extractions at St. Philip Hospital Dental Clinic; Group 3, both white and colored patients presenting for treatment at the Dental Clinic and at St. Philip Hospital.

Group 1

In this group, no extractions were performed, the object having been merely to test the onset and duration of anesthesia.

Experiment 1. Five students were given bilateral mandibular injections: 1.5 cc. of 0.2 percent nupercaine with epinephrine on the right side; 1.5 cc. of 2.0 percent procaine, with epinephrine, on the

left. Two were given single mandibular injections with nupercaine. The students were entirely unaware of the identity of the injected solutions. Anesthesia was considered to have been attained when no pain was elicited by deep pressure of the gums with a sharp probe; it was considered as absent when sensation of pain again became evident on probing. Results:

Elapsed time to produce conduction anesthesia

Nupercaine:	*Procaine:*
Least, 1.5 minutes	Least, 2.0 minutes
Longest, 3.5 "	Longest, 4.0 "
Average, 2.5 "	Average, 2.8 "

Duration of conduction anesthesia

Nupercaine:	*Procaine:*
Least, 1 hour, 29 minutes	Least, 35 minutes
Longest, 5 " 4 "	Longest, 74 "
Average, 2 " 57 "	Average, 58 "

In four of the cases receiving bilateral mandibular injections, there were complaints of muscular pain on the left side (procaine); there was a total absence of pain on the right side (nupercaine). In one case, the reverse was true.

Experiment 2. Five students were given infiltration injections of *nupercaine* in the region of the maxillary right first-molar—1.5 cc. of the same type of solution as that used in Experiment 1. Onset and duration of anesthesia were noted as before. No controls with procaine were made. Results:

Elapsed time to produce infiltration anesthesia (minutes): Least, 1; longest, 2; average, 1.4.

Duration of infiltration anesthesia (minutes): Least, 90; longest, 129; average, 105.

Experiment 3. Two students were given right mandibular injections—1.5 cc. of a 0.2 percent solution of *nupercaine* to which no epinephrine had been added. Onset of anesthesia occurred in 6 and 7 minutes - duration was 1 hour and 10 minutes, and 1 hour and 19 minutes—respectively.

Group 2

Group 2 was composed of 54 negro patients presenting for extractions at St. Philip Hospital. By the nature of the services rendered at this clinic, it was impossible to obtain accurate checks on either the onset or duration of the anesthesia. It was often necessary to inject two or more patients before there was an opportunity to determine the onset of anesthesia on the patient first injected. After the extractions, attempts were made to keep the patients under observation until anesthesia wore off; however, this was often impossible. Consequently, the following data will show, in the average, the maximal time for onset of anesthesia and a minimal time for duration. In this group there were 35 mandibular injections, and 42 infiltration injections; and 94 teeth were extracted. As is usual in clinic work, the extractions varied from simple to relatively difficult. In two cases, the patients had to be reinjected. Data obtained in these two instances were not considered.

Experiment 1. A 0.4 percent solution of *nupercaine* (containing 14 drops of epinephrine to 30 cc. of solution) was used on 30 patients—1.5 cc. for each mandibular or infiltration injection. Results:

(*a*) *Conduction anesthesia*	(*b*) *Infiltration anesthesia*
Elapsed time to produce anesthesia	
Least, 2 minutes	Least, 1.5 minutes
Longest, 12 "	Longest, 10 "
Average, 5.9 "	Average, 4.6 "
Duration of anesthesia	
Least 20 minutes	Least, 17 minutes
Longest, 2 hours, 46 minutes	Longest, 1 hour, 17 minutes
Average, 60 minutes	Average, 41 minutes

Experiment 2. A 0.2 percent solution of *nupercaine*, with the same concentration of epinephrine as that used in Experiment 1, was used on 24 patients—1.5 cc. for either mandibular or infiltration injections. Results:

(*a*) *Conduction anesthesia*	(*b*) *Infiltration anesthesia*
Elapsed time to produce anesthesia	
Least, 1 minute	Least, 2 minutes
Longest, 11 "	Longest, 8 "
Average, 4.2 "	Average, 4 "
Duration of anesthesia	
Least, 20 minutes	Least, 31 minutes
Longest, 1 hour, 50 minutes	Longest, 61 "
Average, 58 minutes	Average, 37 "

Group 3[2]

This group consisted of 75 patients, both white and colored, presenting for extractions at the dental clinics—0.2 percent solution of ***nupercaine*** containing epinephrine was used. Satisfactory anesthesia was obtained, and no untoward manifestations by the patients were observed.

DISCUSSION

Group 1 having been composed of dental students, more dependence was placed on the ability of this group than on the others to give accurate replies as to the presence or absence of pain. Because of the absence of surgical interference, the element of nervousness was not present. However, the duration of anesthesia in this group, as determined by probing, did not necessarily denote the length of time operative anesthesia was present. As compared with procaine, the time of onset of conduction anesthesia with nupercaine was about the same: 2.5 and 2.8 minutes, respectively, for the two drugs; but the duration of anesthesia with nupercaine was about three times that of procaine. It may be also noted that the average duration of procaine conduction-anesthesia (58 minutes) with this selected group, under optimal conditions, was equal to the duration of nupercaine conduction-anesthesia in Group 2 (58 minutes), which, as has already been pointed out, is a minimal figure owing to experimental difficulties.

It was reported by Dobkowsky (3) that the onset of anesthesia with

[2] We are indebted to Dr. I. T. Hardy for the data on this group.

nupercaine was somewhat slow, but that duration was longer than that obtained with procaine. Elzner (4), using a 0.2 percent solution of nupercaine, reported onset of anesthesia for infiltration to occur in 5–7 minutes; for conduction anesthesia, in from 12–15 minutes. Our results, however, do not show that the onset of anesthesia with nupercaine is appreciably longer than with procaine, the average for infiltration being from 1.4 minute (Group No. 1) to 4 minutes (Group No. 2); for conduction, 2.5 minutes (Group 1) to 4.2 minutes (Group 2).

All previous workers report a long duration of anesthesia. Grabner (7) observed that in several cases anesthesia lasted for 2.5 to 6 hours. Elzner (4) found the average duration of nupercaine anesthesia for all types of injections to be 5 to 6 hours. We, however, find that infiltration anesthesia in Group 1 lasted 1 hour and 45 minutes; in Group 2, 37 minutes. Duration of conduction anesthesia for Group 1 was 2 hours, 57 minutes; for Group 2, 58 minutes. The much longer duration of anesthesia reported by Dobkowsky (3) and Elzner (4), as compared with that noted by us, may be due to the fact that they apparently did not themselves determine the duration of anesthesia, but accepted the patients' reports. This discrepancy may then be explained by the fact that we considered anesthesia absent as soon as the patient became sensitive to rather deep probing of the alveolar tissues, although a superficial anesthesia and a feeling of numbness persisted for quite a while afterward. Had we considered the presence of numbness as evidence of anesthesia, our results might have more closely approximated those of the other observers. We believe, however, that our procedure gives a better index of operative anesthesia. Moreover, all these authors used from 2 to 4 cc. of solution, whereas we employed only 1.5 cc.

The absence of "muscular" pain in four of the five cases, in Group 1, of mandibular injections of nupercaine, appears to verify the observations of Elzner (4), who believes the pain caused by the injection of *procaine and epinephrine* is due to localized vasoconstriction, resulting in ischemia of the muscles. According to Lewis (10), the accumulation of metabolites in ischaemic contracting muscle may give rise to pain. With *nupercaine*, however, the anesthesia may be so deep that no pain is felt during the vasoconstrictor action of epinephrine. In addition, owing to the long duration of anesthesia produced by nuper-

caine, the effect of epinephrine probably disappears long before the anesthesia wears off.

The use of nupercaine without epinephrine for mandibular injections (Experiment 3, Group 1) may be valuable in those patients for whom, owing to idiosyncrasy, hyperthyroidism, etc., use of epinephrine is contraindicated. The duration of anesthesia in the two cases was 1 hour 10 minutes, and 1 hour 19 minutes, respectively. This is slightly longer than the average duration of anesthesia with procaine and epinephrine (58 minutes) in the same group. The average duration of conduction anesthesia, with nupercaine and epinephrine, was much longer (almost three times) than for nupercaine without epinephrine. This, of course, is a striking verification of the idea that epinephrine prolongs the action of the anesthetic. Meeker (12), using the human intradermal wheal method, found that the anesthesia produced by procaine plus epinephrine also lasted about three times as long as when epinephrine was omitted.

SUMMARY

By determining the M.F.D. after subcutaneous injection, we found that nupercaine is 28 times more toxic than procaine for guinea-pigs; 22 times for cats; 21 times for dogs. As used clinically by us, however, the nupercaine solution was probably not more than twice as toxic as procaine.

On a group of students, the duration of conduction anesthesia with 0.2 percent nupercaine was 2 hours, 57 minutes; and with 2.0 percent procaine, 58 minutes. Onset of anesthesia with the two drugs required approximately the same time. Infiltration anesthesia with 0.2 percent nupercaine lasted 1 hour, 45 minutes.

With a group of 54 clinical patients, the duration of conduction anesthesia with nupercaine was 58 minutes (minimal); with infiltration anesthesia, 37 minutes (minimal).

Nupercaine has also been used in a routine way on another group of 75 patients with satisfactory results, and without any deleterious effects.

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ADDENDUM

Since this article was submitted for publication, we have found several more papers dealing with this subject. *Wahl* (15), in an article containing no original clinical research, made some statements concerning the use of nupercaine that we consider absolutely unfounded. A reply has been made by one of us (16). The results published by *Melchior* (17) cannot well be discussed, since he does not mention the epinephrine content of his solutions, nor does he describe the method employed for determining the duration of anesthesia. *Deyton et al.* (18) report good results with nupercaine in dental surgery. Their duration of anesthesia was longer than ours, owing perhaps to the fact that they used a higher epinephrine content, and accepted the patients' reports as to duration. They state that nupercaine is forty times more toxic than procaine; an estimate that we consider far too high in the light of our results, and of those of *MacDonald and Israels* (19).

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IMPACTED TEETH

A Comparative Study of Chinese and Caucasian Dentitions

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Considerable interest is attached to impacted teeth, not only on account of the pathologic conditions and systemic disturbances they may produce, but also on account of their evolutional significance. It is not the purpose of this paper to draw clinical or anthropological conclusions, but rather to show by statistical means the frequency of impacted teeth among the Chinese in comparison to that found among other (Caucasian) peoples. The following tables have been compiled from a review of the dental roentgenograms of 5017 patients seen in the Peiping Union Medical College Hospital between the years 1921 and 1931. Of the total number of cases studied, complete oral roentgenograms were available in 3260 cases, or 64.9 percent; and partial oral roentgenograms in 1751 cases, or 35.1 percent. Attention is called to the fact that this material was not specially selected, but includes all cases, for which the dental roentgenograms are still available, that were submitted to routine dental examination in the in- and outpatient clinics of this hospital. This lack of selection is particularly apparent among the group in which partial oral roentgenograms only were taken. Although many of these examinations were made specifically to demonstrate impactions, the lower percentage of this condition in this group makes obvious the fact that the majority of the films were taken in search for other pathological conditions. It seems safe to assume that had full oral roentgenograms been taken in all cases, an even higher total percentage of impactions would have been shown.

The sex and racial composition of the cases studied, as well as the percentage of impactions in each group, is shown in *table 1*. No attempt was made to classify the Chinese patients according to geograph-

ical district or the Caucasian patients by nationality. The latter group consisted of Americans and Europeans in about equal proportions. The roentgenograms of the males and females in the same race were checked separately to ascertain whether sex is a factor influencing the frequency of impactions. A slight difference is shown for the two sexes, but when these percentages are subjected to mathematical comparison, it is evident that the difference between the two percentages is less than three times the standard error of the difference,[1] and therefore can have no statistical significance (*fig. 1*). Any biological significance must await confirmation in the results of investigations of greater magnitude than the one presented here. Com-

TABLE 1

Percentage of impactions in terms of sex and race groups

RACE	SEX	COMPLETE ORAL ROENTGENOGRAMS			PARTIAL ORAL ROENTGENOGRAMS			TOTAL		
		No. of cases	Impactions	Percentage	No. of cases	Impactions	Percentage	No. of cases	Impactions	Percentage
Chinese	Males	1058	362	34.2	1182	357	30.2	2240	719	32.1
	Females	456	139	30.2	367	95	25.9	823	234	28.4
Caucasians	Males	788	95	12.1	100	9	9.0	888	104	11.7
	Females	958	126	13.2	108	8	7.4	1066	134	12.5

parisons made between percentages of impacted teeth in the Chinese and the Caucasian races, on the other hand, revealed a pronounced difference, which cannot be due to chance. As the variation between the percentages is much greater than three times the standard error of this difference, it seems reasonable to assume that race is a factor influencing the frequency of impacted teeth which, as shown in this paper, has both statistical and biological significance.

The frequency with which individual teeth are affected is not without significance. The formulae for the impactions noted in this series are recorded in *tables 2* and *3*. Not only was it surprising to discover

[1] The range of variation allowed for the percentage of impacted teeth in Chinese males would be $34.2 \pm 3 \times 1.45$, or 29.75 to 38.55; etc.

the high total incidence of impactions occurring among the Chinese, but also to note the relative infrequency of impacted cuspids as compared with the number in Caucasian peoples. In both groups, the teeth most frequently impacted were the mandibular third molars. The incidence of impaction according to position is given in *table 4*. Approximately one-third of all impactions found in both the Chinese and Caucasian patients were multiple (*table 5*). Fourteen patients in the Chinese group (1.5 percent) and six patients in the white group (2.5 percent) had four impactions each.

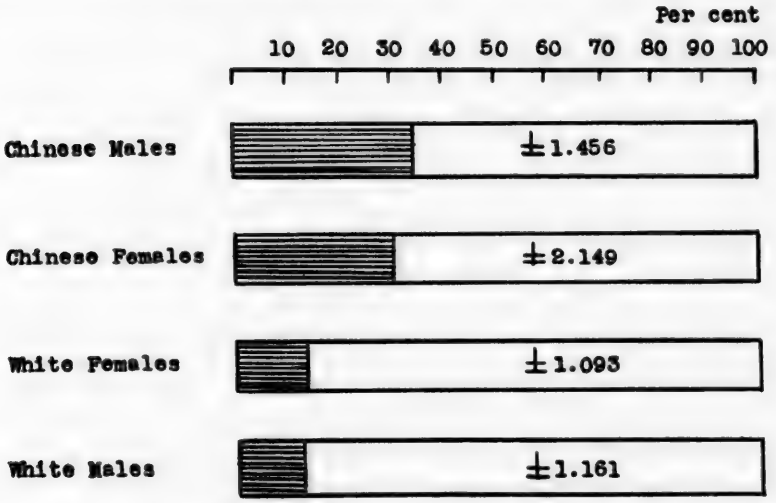

FIG. 1. Graph showing sex and race variation. Shaded sections show percentage of impacted teeth in complete oral roentgenograms. Standard error has been computed.

In the Chinese male series were found ten patients with one supernumerary tooth each, and one with two supernumerary teeth. All were confined to the anterior upper jaw. Three cases appeared in the female group, two of which were upper incisors while one was a lower bicuspid. There was one impacted lower left *fourth* molar among the white males. Among the female group there was one supernumerary upper left third molar, and an unusual case of bilateral upper *fourth* molars (impacted). The supernumerary teeth discovered in this study are listed in *table 6*.

TABLE 2

Impacted teeth in Chinese patients

CHINESE MALES				CHINESE FEMALES			
Complete oral roentgenograms		Incomplete oral roentgenograms		Complete oral roentgenograms		Incomplete oral roentgenograms	
Total no. cases.....1058 No. impactions..... 362 Per cent impactions. 34.2		Total no. cases.....1182 No. impactions..... 357 Per cent impactions. 30.2		Total no. cases..... 456 No. impactions..... 139 Per cent impactions. 30.2		Total no. cases..... 367 No. impactions..... 95 Per cent impactions... 25.9	
Formula	Cases	Formula	Cases	Formula	Cases	Formula	Cases
$\frac{8\|8}{8\|8}$	125	$\frac{8\|}{\|}$	121	$\frac{8\|8}{\|}$	44	$\frac{8\|}{\|}$	31
$\frac{\|}{8\|}$	94	$\frac{\|}{\|8}$	128	$\frac{\|}{\|8}$	40	$\frac{\|}{\|8}$	30
$\frac{\|}{\|8}$	85	$\frac{8\|}{8\|}$	85	$\frac{8\|}{\|}$	21	$\frac{8\|}{8\|}$	18
$\frac{8\|8}{8\|8}$	12	$\frac{8\|}{\|}$	3	$\frac{8\|}{\|}$	6	$\frac{8\|}{\|}$	6
$\frac{8\|}{\|}$	9	$\frac{\|8}{\|}$	4	$\frac{\|8}{\|}$	5	$\frac{\|8}{\|}$	2
$\frac{\|8}{\|}$	7	$\frac{8\|}{8\|8}$	1	$\frac{\|8}{8\|8}$	4	$\frac{8\|}{8\|}$	1
$\frac{\|8}{8\|8}$	5	$\frac{8\|8}{8\|}$	1	$\frac{\|8}{8\|}$	4	$\frac{8\|8}{8\|8}$	2
$\frac{8\|8}{\|}$	4	$\frac{\|8}{8\|8}$	1	$\frac{8\|8}{\|}$	3	$\frac{8\|}{\|8}$	1
$\frac{8\|}{8\|8}$	3	$\frac{\|8}{\|8}$	1	$\frac{8\|8}{\|8}$	3	$\frac{\|8}{8\|}$	1
$\frac{\|8}{8\|}$	2	$\frac{\|3}{\|}$	5	$\frac{8\|}{8\|8}$	3	$\frac{\|3}{\|}$	2
$\frac{8\|}{\|8}$	3	$\frac{\|3^1}{\|}$	1	$\frac{8\|8}{8\|}$	1	$\frac{4\|}{\|}$	1
$\frac{8\|8}{8\|}$	2	$\frac{2\|}{\|}$	1	$\frac{8\|}{\|8}$	1		
$\frac{8\|}{8\|}$	2	$\frac{4\|}{\|}$	1	$\frac{\|8}{\|8}$	1		
$\frac{\|8}{\|8}$	1	$\frac{\|}{\|3}$	1	$\frac{\|}{\|7}$	1		
$\frac{\|}{\|5}$	1	$\frac{9\|}{\|}$	1	$\frac{3\|}{\|}$	2		
$\frac{3\|}{\|}$	2	$\frac{\|4}{\|}$	1				
$\frac{2\|}{\|}$	1	$\frac{3\|}{\|}$	1				
$\frac{\|3}{\|}$	2						
$\frac{5\|}{\|}$	1						
$\frac{\|}{8\|7}$	1						

[1] Also a supernumerary $\frac{\|2}{\|}$.

TABLE 3

Impacted teeth in Caucasian patients

WHITE MALES				WHITE FEMALES			
Complete oral roentgenograms		Incomplete oral roentgenograms		Complete oral roentgenograms		Incomplete oral roentgenograms	
Total no. cases..... 788 No. impactions..... 95 Per cent impactions. 12.1		Total no. cases. .....100 No. impactions..... 9 Per cent impactions...9.0		Total no. cases..... 958 No. impactions..... 126 Per cent impactions. 13.2		Total no. cases.....108 No. impactions..... 8 Per cent impactions....7.4	
Formula	Cases	Formula	Cases	Formula	Cases	Formula	Cases
$\frac{\overline{8}\,\overline{8}}{\quad}$	25	$\frac{\overline{8}}{\quad}$	5	$\frac{\overline{8}}{\quad}$	33	$\frac{\overline{8}}{\quad}$	3
$\frac{\overline{8}}{\quad}$	22	$\frac{\overline{8}\,\overline{8}}{\quad}$	2	$\frac{\quad}{\overline{8}}$	29	$\frac{\quad}{\overline{8}}$	2
$\frac{\quad}{\overline{8}}$	20	$\frac{\quad}{\overline{8}}$	1	$\frac{\overline{8}\,\overline{8}}{\quad}$	19	$\frac{\overline{8}}{\quad}$	1
$\frac{5}{\quad}$	5	$\frac{\overline{8}}{\overline{8}}$	1	$\frac{\overline{8}}{\quad}$	8	$\frac{\overline{8}}{\quad}$	1
$\frac{\overline{8}\,\overline{8}}{\quad}$	3			$\frac{\quad}{\overline{8}}$	6	$\frac{\overline{3}}{\quad}$	1
$\frac{\overline{8}\,\overline{8}}{\overline{8}\,\overline{8}}$	3			$\frac{\overline{8}\,\overline{8}}{\quad}$	5		
$\frac{\overline{8}\,\overline{8}}{\overline{8}}$	2			$\frac{\overline{8}}{\overline{8}}$	2		
$\frac{\overline{8}}{\quad}$	2			$\frac{\overline{8}\,\overline{8}}{\overline{8}\,\overline{8}}$	3		
$\frac{\overline{8}}{\overline{8}\,\overline{8}}$	1			$\frac{\overline{8}}{\overline{8}\,\overline{8}}$	1		
$\frac{\overline{8}\,\overline{8}}{\overline{8}}$	1			$\frac{\quad}{\overline{8}}$	2		
$\frac{\quad}{\overline{8}}$	1			$\frac{\quad}{\overline{8}\,\overline{8}}$	2		
$\frac{\overline{3}\,\overline{3}}{\overline{8}}$	1			$\frac{\quad}{\overline{8}}$	2		
$\frac{\overline{3}\,\overline{3}}{\quad}$	2			$\frac{\overline{8}}{\overline{8}}$	1		
$\frac{\overline{1}\,\overline{1}}{\quad}$	1			$\frac{\overline{8}\,\overline{8}}{\overline{8}}$	2		
$\frac{\quad}{\overline{3}}$	2			$\frac{\overline{8}\,\overline{8}}{\quad}$	1		
$\frac{\quad}{\overline{3}\,\overline{3}}$	1			$\frac{\quad}{\overline{3}}$	3		
$\frac{\overline{5}}{\quad}$	1			$\frac{\overline{3}}{\quad}$	2		
$\frac{\overline{3}}{\overline{8}}$	1			$\frac{\overline{8}\,\overline{7}}{\quad}$	1		
$\frac{\overline{9}}{\quad}$	1			$\frac{\quad}{\overline{4}}$	1		
				$\frac{\overline{3}}{\overline{8}}$	1		
				$\frac{\overline{9}\,\overline{9}}{\quad}$	1		
				$\frac{\overline{3}\,\overline{3}}{\quad}$	1		

Although the values shown in this study are not large, they are of sufficient magnitude to carry considerable significance, and should

TABLE 4

Site of impaction

	CHINESE				CAUCASIAN			
	Male	Female	Total	Per cent	Male	Female	Total	Per cent
4th molar (supernumerary)	1	0	1	0.1	1	1	2	0.9
3rd molar	699	228	927	97.3	95	123	218	91.6
2nd molar	1	1	2	0.2	0	1	1	0.4
1st molar	0	0	0		0	0	0	
2nd bicuspid	2	0	2	0.2	1	0	1	0.4
1st bicuspid	2	1	3	0.3	0	1	1	0.4
Cuspid	12	4	16	1.7	6	8	14	5.9
2nd incisor	2	0	2	0.2	0	0	0	
1st incisor	0	0	0		1	0	1	0.4
Total	719	234	953	100	104	134	238	100

TABLE 5

Multiple impactions

			ONE IMPACTION		TWO IMPACTIONS		THREE IMPACTIONS		FOUR IMPACTIONS	
			No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
Chinese	Male	Complete oral roentgenogram	202	55.8	138	38.1	10	2.8	12	3.3
		Incomplete oral roentgenogram	268	75.1	86	24.1	3	0.8		
	Female	Complete oral roentgenogram	75	54.0	53	38.1	11	7.9		
		Incomplete oral roentgenogram	72	75.8	21	22.1			2	2.1
	Total		617	64.7	298	31.3	24	2.5	14	1.5
Caucasian	Male	Complete oral roentgenogram	53	55.8	34	35.8	5	5.3	3	3.1
		Incomplete oral roentgenogram	6	66.7	3	33.3				
	Female	Complete oral roentgenogram	82	65.1	34	27.0	7	5.6	3	2.3
		Incomplete oral roentgenogram	8	100						
	Total		149	62.6	71	29.8	12	5.0	6	2.5

represent a fair cross-section of the local Chinese and foreign populations. My personal observations would lead me to believe, however,

TABLE 6

Supernumerary teeth

FORMULA	CHINESE			CAUCASIAN		
	Males	Females	Total	Males	Females	Total
$\frac{\|1}{+}$	3	1	4			
$\frac{1\|}{+}$		1	1			
$\frac{\|2}{+}$	1 (unerupted)		1			
$\frac{2\|}{+}$	1 (unerupted)		1			
$\frac{\|2}{+}$ plus impacted $\frac{\|3}{+}$	1		1			
$\frac{2\|3}{+}$	1 (unerupted)		1			
$\frac{\|3}{+}$ plus impacted $\frac{+}{\|8}$	1		1			
$\frac{\|3}{+}$ plus impacted $\frac{+}{8\|8}$	1		1			
$\frac{3\|}{+}$		1	1			
$\frac{+}{\|5}$ plus impacted $\frac{+}{8\|8}$	1		1			
$\frac{8\|}{+}$ plus impacted $\frac{8\|}{+}$					1	1
$\frac{+}{\|9}$	1 (impacted)		1			
$\frac{+}{9\|}$				1 (impacted)		1
$\frac{9\|9}{+}$					1 (impacted)	1
Total.....	11	3	14	1	2	3

that were a large group of complete oral roentgenograms taken of the younger generation of Chinese exclusively, a much higher percentage of impactions would be discovered than that recorded in this series.

This paper would be incomplete if, in addition to the statistical material presented, attention were not called to the serious pathological conditions which arise from neglected or untreated cases of impacted teeth. Osteomyelitis of the mandible, associated with impacted mandibular third molars, is a very common finding among the Chinese. The frequency with which this condition is encountered, as well as the severity of both the local and general symptoms resulting therefrom, provided the stimulus for the study presented above. The necessity for the early diagnosis of impacted teeth is emphasized, as well as for the careful pre- and post-operative attention that the proper removal of these teeth demands.

SOME METHODS FOR THE CONTROL OF PERIAPICAL INFECTION[1]

A Preliminary Report

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Root-canal therapy has for its object the re-establishment of the periapical tissues in a state of health. This calls for the elimination of existing infection and the prevention of re-infection. The condition or state of the periapical tissues following root-canal therapy can be determined histologically, bacteriologically, and roentgenologically. The *histologic* way is rarely useful, because it necessitates sacrificing the tooth; the *roentgenologic* way must be regarded only as an adjunct means of control, because it gives no direct evidence of pathosis except in gross conditions. This paper deals with the bacteriologic means of control.

There are three ways by which samples from the periapical region may be obtained for *bacteriologic* examination without removing the tooth; namely, intradental, via apicostomy, and via root-amputation. Two or all of these methods may be combined for purposes of special investigation.

The *intradental method* of approach through the root canal requires no surgical interference. By this method the root canal is emptied of its contents, thereby giving access to the periapical tissue through the apical foramen. Samples for bacteriologic study are then obtained by paper-points, scrapings on barbed broaches, etc., which have previously been sealed in the root canal or are freshly inserted. This method of obtaining material for culture is precluded when the root canal is narrow or tortuous, or when the root-canal filling is cementous in nature, or projects beyond the apical foramen. In such cases

[1] This study has been aided by a grant from the Research Fund of the Academy of Stomatology, Philadelphia, Pa. The author is greatly indebted to Dr. K. Polevitzky for her generous coöperation, and bacteriologic assistance, in the course of this work.

cultures are best obtained either by apicostomy or root amputation. The intradental method is practicable when the root-canal filling-material is a paste, or gutta-percha, or other easily removable substance, and especially when the root filling does not reach to the apex. Following the removal of the root-canal filling, no medication should be employed in the canal during the time cultures are taken. An aseptic technic must, of course, be followed throughout. Reliance should not be placed on only one culture, but several cultures should be taken over an extended period of time. It is important that contact be made with the apical tissues by the paper-point or instrument used in taking the culture. These agents should be passed gently beyond the apical foramen, without injuring the tissues, until a slight sensation is felt at the root end, and then held there for several minutes. When the resultant cultures are repeatedly negative, the evidence indicates that the periapical tissues are sterile.

Case-reports. Mr. C. Y. G. Age 29. Chronic alveolar abscess, $\underline{5}|$. Root-canal therapy from 4/25/30 to 5/5/30, after old root-canal filling inserted in 1922 had been removed (re-treatment case). Check-up by intradental method: 12/28/31.—Removed root filling. Cultures in hormone broth and Rosenow liver-brain broth. 1/8/32.—Dressing from 12/28/31 in hormone broth; paper-point in Rosenow liver-brain broth. 1/25/32.—Dressing from 1/8/32 in Rosenow liver-brain broth; paper-point in hormone broth; scrapings on Kerr file over blood-agar plate. 1/27/32.—Smear made from dressing of 1/25/32; paper-point in Rosenow liver-brain broth; paper-point in hormone broth; scrapings on Kerr file over blood-agar plate. 2/1/32.—Filled root canal. Smear and all cultures, negative.

Table 1 presents data of a second case-report on the intradental method.

"*Apicostomy*"[2] means cutting through the alveolar bone to the apical region of a tooth, with a trocar and cannula, to obtain material for bacteriologic study. An *apicostome* is a dental trocar and cannula specially devised for this purpose. The tooth is not mutilated by apicostomy, nor is its function impaired. The wound created by the apicostome heals, objectively at least, within a day or two; swelling or pain seldom occurs. The operation is easy to perform, being much simpler than a root amputation. The technic is not exacting, and

[2] Grossman: Apicostomy—a method to obtain cultures from periapical tissue; *Journal of Dental Research*, 1932, xii, p. 595; Aug.

only one assistant is needed—anyone who can preserve the chain of an aseptic operation, preferably a bacteriologist. The technic is as follows: (1) The area is anesthetized with 1.5 percent novocain. (2) The field of operation is sterilized with 1.25 percent iodin in isopropyl alcohol, and then decolorized with 90 percent alcohol. The mouth secretions are kept away with sterile cotton-rolls and gauze.

TABLE 1

Data in a case-report on the intradental method

Miss E. M. M. Age 23. Acute alveolar abscess, $\underline{1}|$. Root-canal therapy from 2/1/27 to 2/22/27

DATE 1931	RECORD OF BACTERIOLOGIC FINDINGS			
	Hormone broth	Rosenow glucose-brain broth	Rosenow liver-brain broth	Bouillon
4/20	Paper-point	Paper-point		
4/26	Paper-point	Paper-point		
4/29	Paper-point and scrapings on broach	Paper-point and scrapings on broach		
6/11	Paper-point		Paper-point of 4/29	Scrapings on broach
6/13	Filled root canal			
9/3	Removed root-canal filling. Gold wire and paper-point sealed in root canal			
9/4		Gold wire and paper-point of 9/3		
10/12		Paper-point		Paper-point of 9/4
10/14	Filled root canal			

All cultures, incubated from 2 to 16 days, were sterile.

Microscopic examination of smears on 4/26, 6/11, and 10/12, revealed no bacteria or pus cells.

(3) A control culture is made from the mucous membrane on a blood-agar slant. (4) The apicostome is directed into the apical region and, when the desired location is reached, the trocar is removed but the cannula is left in place. A culture in hormone broth is made from the trocar. (5) A sterile, flattened, platinum needle is inserted through the cannula until it reaches the periapical tissues; rotated several times in this region; withdrawn; and then used to inoculate a tube of hormone broth. (6) The platinum needle is sterilized, reinserted in

the cannula, and more material obtained for inoculating a tube of Rosenow glucose-brain broth. (7) Over the wound is placed an antiseptic dressing, which the patient is cautioned not to disturb for at least an hour; or the wound is plugged with bone wax.

Twenty treated non-vital teeth were investigated by this method. These teeth were representative of the usual run of periapical infections—from acute and chronic alveolar abscesses to "granulomas." Following root-canal therapy, each tooth had given a negative smear and culture before it was filled. In some cases apicostomy was performed only a few months after filling; in others, as much time as three years elapsed. In this group of twenty cases, nineteen teeth gave negative cultures (*table 2*). Five non-treated teeth of known

TABLE 2

Data relating to twenty teeth subjected to apicostomy

CULTURES	BLOOD-AGAR SLANT (CONTROL)	HORMONE BROTH	ROSENOW GLUCOSE-BRAIN BROTH	HORMONE BROTH (TROCAR)
Treated cases: negative	19	19	19	20
Treated cases: positive	1	1	1	0
Untreated cases (control): negative	4	3	3	2
Untreated cases (control): positive	1	2	2	3

periapical infection were also studied. Only three yielded positive cultures (*table 2*). Plans are under way to increase this small number of controls. Meanwhile, decision as to the value of apicostomy must be kept *sub judice*.

The *root-amputation* method provides a direct approach to the apical region. Few patients would submit, however, to this operation for purposes of culture study, especially when the tooth to be studied had been comfortable. From a bacteriologic standpoint the method is very satisfactory. It affords a direct approach, and also allows several cultures to be taken at different levels in the tissues in the course of the operation. In addition, the root-end itself may be cultured after its removal. This operation is impractical, however, from the point of view of the patient. We have studied two cases by this method. Apicostomy had been performed on one of them previous to root amputation. The bacteriologic findings from both methods of investigation were identical. Reports on these cases follow.

Mr. S. E. K. Age. 20. Chronic alveolar abscess, |1. Root-canal therapy from 2/25/28 to 3/6/28. Root amputation performed, 3/11/29. (Surgery by Drs. Ivy and Curtis; bacteriology by Dr. K. Polevitzky.) Cultures: (1) after flap of mucous membrane was lifted; (2) after alveolar bone was removed; (3) after bur had severed root; (4) from osseous bed, after root-end had been removed. All cultures, made in Rosenow glucose-brain broth, were negative after seven days of incubation at 37.5°C.

Mrs. L. L. Age 36. Chronic proliferating pericementitis ("granuloma"), 3|. Root-canal therapy from 12/21/26 to 1/4/27. Apicostomy performed, 10/4/28. (Bacteriology by Dr. K. Polevitzky.) Blood-agar slant (control), negative; hormone broth, negative; Rosenow glucose-brain broth, negative. Root amputation, 11/16/31. (Surgery by Drs. Ivy and Curtis; bacteriology by Dr. K Polevitzky.) Cultures: (1) From mucous membrane, after novocain anesthesia was obtained. Rosenow glucose-brain broth and hormone broth; negative. (2) From exposed alveolar bone after incision. Rosenow glucose-brain broth and hormone broth; negative. (3) From root-apex after it was severed by bur. Rosenow glucose-brain broth and hormone broth; negative. (4) From exposed root-end, following removal of root apex. Rosenow glucose-brain broth and hormone broth; negative. (5) Root apex dropped in bouillon and transferred (within five minutes) to Rosenow glucose-brain broth; staphylococcus (contaminant). All cultures incubated for eight days at 37.5°C.

Discussion and summary. Root-canal therapy aims to eliminate infection in the pulp canal, and especially in the periapical region. Assuming that such infection is eliminated and the tissues are rendered sterile, do the tissues *remain* sterile? The methods presented here are intended to determine this from a bacteriologic standpoint; they may be used to check-up on a particular method of root-canal therapy, and also applied to teeth suspected of being possible foci of infection. Such teeth need not be sacrificed when negative cultures are obtained.

The *intradental method* is simple and expedient in most cases, but material for culture is probably not obtained from a large sector of the periapical region. This method cannot be used in narrow or tortuous canals, or where the root-canal filling cannot be removed. Cultures taken over an extended period of time via the intradental route were repeatedly negative from two treated (but previously infected) teeth.

The *apicostomy method* gives a direct approach to the periapical region and requires only a simple surgical technic, but the method is as

yet insufficiently controlled. Nineteen of twenty teeth subjected to apicostomy yielded negative cultures. Three of five control cases (untreated, periapically infected teeth), however, also gave negative cultures.

The *root-amputation method* unquestionably provides the best approach to the apical tissues, but few patients submit to this operation for the purpose of investigating the condition of the periapical tissues. In addition, it requires skilled surgical technic and assistance. Two treated (but previously infected) teeth subjected to root amputation yielded negative cultures. Cultures obtained via apicostomy from one of these teeth prior to the root amputation were also negative.

The methods presented here are applicable to private, as well as institutional, practice. This preliminary report is presented in the hope that others will conduct similar studies, so that sufficient data on the bacteriologic status of treated, non-vital teeth may be accumulated.

THE STATUS OF DENTISTRY

Notes on the Question Whether Dental Practice Should Be Included in Medical Practice, with Comment on a Substitute for State Medicine[1]

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[1] These notes were compiled in the spring of 1931 to meet a local emergency. The writer, having learned early of the effort in New York City to organize a so-called American Board of Stomatology, prepared, for private use by interested laymen, these direct statements on the present status and prospective evolution of dentistry. The notes, which originally were privately submitted to many advisers for constructive criticism, have lately been revised to apply to current conditions. Among the advisers were members of the American College of Dentists. These notes are published under the auspices of the College, authorization therefor having been voted at the annual convocation in Buffalo, September 11, 1932, on the recommendation of the standing Committee on Education, Research, and Relations. Economic reasons have made it necessary to restrict this number of the *Journal* to a few of the many available manuscripts. The College, by paying the cost of publication, makes it possible to add these notes to this number and volume without expense to the *Journal*, and without displacing other manuscripts.—[*Ed.*]

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I. FOREWORD

The author of these notes is a layman who has profound respect for physicians and dentists, and earnestly appreciates the value and importance of their professional services. He favors measures that would advance all health-service professions in public usefulness and appreciation. For many years he has been a teacher, in two universities, of one of the so-called medical sciences, his intimate relationships during this period having included active service in faculties of medicine, dentistry, and pharmacy. He has no personal stake in the solution of any of the problems herein considered, excepting his abiding interest in the continual promotion of the public welfare, and his desire to contribute thereto. He feels that all conditions that would disparage or degrade any phase of licensed health service, or dishearten those devotedly engaged therein, are inimical to the public good, and that all such unfavorable conditions should be removed. It is not a cause for public congratulation when any person or any group of accredited health-servants, within or without a given profession, belittle or hinder the efforts of others likewise accredited, instead of helping sympathetically and generously to perfect the coördinate functions of all practitioners. A constructive sense of deficiency justly possesses the conscientious practitioner who, in any instance and for any reason, fails to do for his patient what he knows good practice requires. But there can be no occasion, in any division of health service, for the existence of a group inferiority-complex as a deterrent of earnest, competent, and self-respecting endeavor for the common good. Thus, the public usefulness of teaching, and the worthiness of teachers, cannot be measured by the regret of some teachers that they did not become lawyers. The public value of dentistry, and the standing of dentists, is not determined by the wish of some dentists that they had become physicians. Unfortunately, misfits and vanities are common in every profession; they reflect individual failures or absurdities, not group capacities. Pomposity and com-

placence are often indices of inefficiency. It is useless to try to determine which leg of a tripod should be regarded as functionally the most important, relatively the most distinguished, etc. There is plenty of honor and respect for the practitioner, in any field, who deserves them. In health service, real nobility radiates from unselfish, sincere, faithful, and effective effort for the protection and betterment of others, not from conceit or self exaltation. The attainment of perfect success in practice is quite as difficult in one division as in another.

The public interest everywhere will be served best by the unprejudiced and earnest promotion of all accredited professions of health service to their highest attainable usefulness and standing. These notes represent, in general, a layman's effort to promote this cause. In particular, they express the conviction that there is no occasion for any dentist, however superior he may be, to assume a misanthropic or defeatist attitude toward his profession. Like all other professions, dentistry has not attained perfection. No profession ever will or can. Important conditions show that the evolution of dentistry has not been halted. Dentistry, as *health service* has never been more useful or more widely appreciated. Dentistry, as a *profession*, has never been more earnestly and successfully striving to grow steadily in effectiveness. *Independence with interdependence* is a useful working ideal.

II. SUMMARY OF GENERAL CONCLUSIONS

The facts in Sections III–X, below, warrant the following conclusions:[2]

Dentistry is a *natural division of health service;* that is to say, it is a natural division of "medicine." Dentistry is not a specialty of "*medical practice.*"

Dentistry, a separately organized profession in the United States since 1839–40, has merited and won a distinguished place in public service and in public respect. Dentistry continues to require freedom, encouragement and coöperation to maintain its normal growth, and to meet all its increasing obligations and opportunities, as a natural division of health service. Existing dental leadership is steadily promoting this desirable development.

[2] For the convenience of those who may not care to read the details on which the conclusions are based, this summary of general conclusions is presented at the beginning, rather than at the end.

Dentistry, maintained as a separately organized profession, sustained on its adapted system of professional education, steadily improved, and more closely affiliated with public health-work, with medical practice, and with medical education in universities, hospitals, and dispensaries, should be made the full health-service *equivalent* of an oral specialty of medical practice.

Existing dental leadership is seeking to develop dentistry into the full health-service equivalent of an oral specialty of medical practice:

(a) Without making dentistry a part of medical practice. Dentistry could not be absorbed into medical practice, in Canada or the United States generally, without demoralizing current dental practice, destroying the dental profession, and seriously disturbing the organization of medical practice and of medical education.

(b) By giving dentistry all the scientific and practical qualities it might acquire under the greatest possible opportunity for development—such qualities as it would attain if developed under advantages equal *in character* to those that are, or will be, available to the most favored specialty of medical practice. As rapidly as the means at hand permit, dental practice is being given the highest attainable health-service *value to the patient*, in terms of all the science and art that can be brought to that service from every available resource.

It would be desirable to convert dentistry into a specialty of medical practice, and to discontinue its independent status, if dentistry could not be satisfactorily made the full health-service *equivalent* of such a specialty, and if this conversion would assuredly make dental practice more efficient than it is, and will be, as a separately organized division —assumptions that current conditions in medical practice do not support. Only extraordinary conditions that could not otherwise be met would justify the discontinuance of the dental profession, now in its ninety-fourth year as a separately organized division of health-service.

Whether dentistry is made the *equivalent* of an oral specialty of medical practice, or converted into such a specialty, the results in health service for the *patient*—the essential matter—would be identical. The former objective is desirable and attainable now; the latter is impracticable.

The unusual mechanical and esthetic exactions of dental practice have fully justified, and continue to require, the maintenance and active development of dentistry as a separately organized profession. In direct dental treatment, knowledge of the so-called medical sciences and of clinical medicine can, *in the main*, be applied in proportion only to the dentist's technical ability.

Dental practice, wherever formally included in whole or in part in medical practice, has failed to advance to the degree of success attained in the United States and Canada under the control of a profession separately organized to further it.

The "medical" sciences—all of them being branches of general science—are basic for medical practice. A "medical" science is one that, while basic for medical practice, is not peculiar to such practice. The *science of medicine* is not a mosaic of the "medical" sciences. It consists not only of the parts of the "medical" sciences relating to medical practice, but also of the great body of knowledge which, being peculiar to the clinical aspects of medical practice, *is not included in any of the "medical" sciences*. The term "medical science" is neither a description nor a definition, merely a convenient label—a medical provincialism that is equivalent to a nickname.

The "medical" sciences have not been developed exclusively by or for physicians. They "belong" wherever they apply, e.g., agriculture, fine art, industry, etc. The use of "medical" sciences in fine art or agriculture does not convert either fine art or agriculture into medical practice. The use of "medical" sciences in dentistry—where they might be just as appropriately and provincially labeled "dental" sciences—makes dental practice more scientific and therefore more efficient, but does not convert dental practice into medical practice.

Undergraduate medical education *might* theoretically be so reorganized that it *could* be made identical in part for all health-service practitioners, and that, for each type, it would branch early from a common base in the "medical" sciences; and dentistry *might* then be included in such a new system of *divergent* "medical" education. But if this *revolution* were brought about—there are no signs of its coming—the need for separate organization of the dental educational facilities and of the dental practitioners would continue. Probably various

present specialties of medical practice would then also be separately organized. Their trend is now in this direction.

A number of dentists and some physicians, who assume arbitrarily that the dental profession is incapable of further self-improvement, urge that dentistry—in whole or in part—be included in medical practice, and that the dental profession be discontinued. A few, who seem to feel that there is something degrading in handwork, would have the *mental* part of dental practice allotted to a few physicians as directors (masters), and the *manual* part to a multitude of uneducated assistants (servants)—the "master-servant plan." These dentists and physicians assume, with surprising disregard for reality and a lack of humor, that these proposed changes would automatically transform dentistry from an inferior practice to a superior service. It is plain, however, that, until "organized medicine" becomes sufficiently interested (if ever) to demonstrate to "organized dentistry" that dental practice not only could but also certainly would be developed more fully to *public advantage* as a part of medical practice than as a natural division of health service, the *public welfare* will require that dental practice be sustained, and steadily improved, by a separately organized profession. Physicians, dentists, and laymen understand, and the prevailing judgment determines, that it will be better in the *public interest* to maintain dentistry as an important division of health service, receiving intensive attention and development, than to lower it to the level of a neglected phase of medical practice.

Understanding and coöperation between dentists and physicians, and among all classes of accredited health-service practitioners, *for the welfare of the individual patient*, are steadily increasing, and should and will grow cumulatively more intimate.

"Organized medicine"—despite the wishes and promptings of a few would-be "stomatologists"—shows no inclination to engage in the unethical and unsportsman-like procedure of trying to *force* dentistry into a status that would be unwelcome to dentists. In 1925, organized medicine, by discontinuing the Section on Stomatology of the American Medical Association after an existence of forty-four years, indicated emphatically the lack of any such inclination.

The history of medicine, the history of dentistry, and the history of human nature, collectively warrant the conviction that dentistry will

become cumulatively more useful *to the public*, as practised by a separately organized profession giving it intensive attention and promotion, than it could if it were included in medical practice, and then subjected to the relative neglect that would ensue.

Specialists in medical practice, unlike dentists, have not been receiving formal systematic education, nor licensure, for their particular functions. (A few exceptions prove the rule.) The public is entitled to receive such protection, through the authoritative certification of the specialist of medical practice, as is now given through the licensure of the dentist as an oral specialist in health-service, after a systematic training for the performance of that function. This situation affords a further suggestion of the extent of the neglect to which dentistry would have been subjected in North America, if it had been an accredited specialty of medical practice.

If university education and formal licensure under a state's authority, for the practice of dentistry, do not qualify dentists collectively to determine the status and guide the evolution of their profession, in the public interest, these two questions naturally arise: Which group or agency not so educated, and not so licensed, can *reasonably* assume to be more competent to do so? And: Why?

While dentistry is being evolved into the full health-service equivalent of an oral specialty of medical practice, under existing dental leadership, efforts outside of the dental profession to control dentistry's future relationships should be suspended.

Evolution may be trusted to solve the problems of the status and relationships of all types of health-service practitioners. Some current agitation—most of it academic and visionary, and like past recurrences of similar views since 1839–40—is intended to convert dental practice into a specialty of medical practice, or to transform dental practice into a service by a few medical *directors* ("stomatologists") of many uneducated technicians. These radical proposals not only divert the profession's constructive attention from the nearest and most desirably attainable objectives, but also mislead influential laymen into concluding that, if dental practice is soon to be converted into medical practice, ***financial support of dental schools and of the work of the dental profession as such would now be untimely and later superfluous.***

When dentistry—sustaining its separate organization, and improving its adapted system of education and practice—becomes the full health-service *equivalent* of an oral specialty of medical practice, the laity will have no material interest in the technical question whether dentistry should *then* be formally converted into a specialty of medical practice. In that day, however, and *after* that achievement—whether near or remote—the medical and dental practitioners *then* directly concerned will easily agree either that the organization of physicians and dentists into two autonomous professions has been so satisfactory that it should be continued, or so undesirable that union should be effected. The ensuing decision, *then*, will be natural and useful. Meanwhile, in North America, dentistry cannot profit from any new relationship, which, by forced requirements or artificial character, would increase the difficulties of dental practice without assuring higher quality in the practitioner and greater excellence in his service, or which would needlessly increase the economic load for either the public or the profession, or both.

(The facts in the notes in Sections III–X, warrant the foregoing conclusions.)

The Supplement presents the suggestion that, in every community, adequate health service *should be made available to all within the means of each*. A substitute for "state medicine" is outlined. The health-service professions, in effective coöperation, should take the initiative in creating professional "agencies," especially for selected patients having low income. Such agencies, to be originated and maintained *wholly under professional control* with lay coöperation, should avoid undesirable competition with private practitioners, and should attain the greatest benefits for all concerned. These agencies should be established if, where, when, and as, the allied health-service professions, in harmony with their humanitarian purposes and responsibilities, would determine in the public interest. The financial support of these agencies should be as varied as the necessities might require. This general plan would put all problems of community health-service directly into the hands of the organized health-service professions, which are the most competent authorities to devise ways and means, with lay coöperation, for the solution of these problems.

III. PRELIMINARY COMMENT: EVOLUTION OR REVOLUTION?

The primary purpose of dental practice is the promotion of the greatest possible degree of oral health, and through it of general health, for the individual person and for the community. Two general plans for the most effectual achievement of this purpose in oral health-service have been under consideration in North America since the organization of dentistry as an independent profession nearly one hundred years ago.

(x) In Canada and the United States, according to the prevailing opinions, this purpose is being accomplished with cumulative effectiveness through the present evolution of dentistry as a separately organized profession. Regarding the success of this evolution, Dr. Charles W. Eliot, when President Emeritus of Harvard University, commented in part as follows: "The greatly improved standing of the dental profession among the professions . . . . is one of the most striking changes in public opinion that I have witnessed during my seventy years of observation of educational progress. . . . . I do not think I have seen during my seventy years of observation of the professions and the means of training them any change so great as that which has taken place in regard to the dental profession, and to the means of training dentists." (*"The progress of dentistry and of the dental profession:" Address before the Dental School Society of the Phillips Brooks House Association, Harvard University, December 8, 1924. Pamphlet: Harvard Dental School, 1925, pp. 14 and 19.*)

(y) Past and present proponents of the alternative plan have expressed the belief that oral health-service could be conducted most effectually by making dental practice a part of conventional medical practice and calling it "stomatology;" that is to say, by permitting only licensed physicians ("stomatologists") to engage in dental practice, and discontinuing the dental profession. Recently several who hold this general view have revived the "master-servant" idea, according to which dentistry could be practised most usefully if the actual work were done by many uneducated assistants (servants) under the "direction" of a few stomatologists, i.e., physician-dentists (masters). Those who advocate this plan suggest that one master could "easily" direct about twenty servants.

(z) The assumption that dentistry would be something more or better than it is, if all or a part of it were called "stomatology," exemplifies a readiness to attach more importance to labels than to contents, or more significance to make-believe than to reality. "Medicine" originally meant to remedy or cure. ["*Medicina* (ars)"—healing art; "*medicina* (res)"—a remedy; "*medicus*"—of healing; also a physician.] Today "medicine," by including measures to prevent sickness and by disregarding etymology, means not only to remedy or cure, but also quite the contrary—to make remedial or curative treatment unnecessary. As medical knowledge has advanced and medical procedures have been changed in consonance, including the development of prevention and of surgery, new meanings have been imparted to "medicine." Instead of replacing "medicine" by a succession of words intended to indicate etymologically the broader or deeper modern meanings, the import of the original term has been conveniently enlarged as the scope of medical practice has expanded. In this way "medicine" has come to mean more and more as physicians, without restricting themselves to its etymology, have included more and more in its significance. Along the same line of reasoning one sees clearly that, although etymologically "dentistry" refers only to teeth, nevertheless logically it also comprehends the contiguous parts and their systemic relationships. Certainly by usage in North America, in conformity with this logic and also with the criteria of common sense, "dentistry" has acquired the broader meaning suggested by the more detailed and lengthy "oral health-service." By logic, usage, and convenience, "dentistry" has thus become the practical equivalent of "stomatology," which etymologically means the sum of scientific knowledge concerning the mouth, but etymologically does not include the rest of the body (although "stomatology" is now used by some to include systemic relationships with the mouth). All this being true, "dentistry" and "dentists"—terms that in North America have been representing the earnest and aspiring endeavors of generations of faithful practitioners of oral health-service—should not, for *etymological* reasons, be formally replaced by "stomatology" and "stomatologists."

The notes in Sections IV–X, below, present reasons why, in the public interest, the evolution mentioned in paragraph (x), above,

should not be superseded by the revolution there indicated in paragraph (y).

IV. DEFINITIONS: "MEDICINE," "MEDICAL PRACTICE," "MEDICAL SCIENCES," ETC.

The so-called medical sciences are independent branches of general science. Collectively the "medical" sciences do not constitute the "science of medicine." The use of "medical" sciences in dentistry makes dental practice more scientific and effective, but does not convert dental practice into medical practice

A. "Medicine," in its most comprehensive meaning, includes the sciences and arts of health service in all aspects and in all relationships. In this broad and theoretical sense, "medicine" includes not only conventional medical practice but also dentistry, public education for the protection of health and for the prevention of disease, nursing, pharmacy, public-health administration, etc. All these services are related to the human body and the maintenance, restoration, or support of its functions.

a. From conditions of preference, convenience, custom, necessity, or all of these, the chief kinds of health service have become separately organized, and the practitioners of each separately educated and licensed.

B. "Medicine," in the common use of the term, is the science and art of "medical practice" as defined by statute. In the United States, medical practice may be legally conducted in any state solely by persons who have been awarded the M.D. degree by recognized medical schools, and who as such have also received, from the authoritative public agency, licenses to engage in statutory medical practice.

b. A license to practise medicine does not include a license to engage in the professional practice of dentistry, nursing, pharmacy, etc., for each of these is a form (division) of medicine (health service) that physicians, as such, have not been trained to conduct.

c. "Organized medicine" in the United States is the voluntary national association of men and women who have been licensed to engage in medical practice as defined by statute. Organized medicine does not include the national associations of dentists, nurses, pharmacists, etc.

d. "Medical education," in its ordinary meaning, signifies the professional education that leads to the award of the M.D. degree. The term is not used to indicate the professional education of dentists, nurses, pharmacists, etc.

C. "Medical science," as a term, is neither a description nor a definition. It is a convenient label—a medical provincialism that is equivalent to a nickname.

e. Various separately organized divisions of general science, such as anatomy, bacteriology, biochemistry, embryology, histology, physiology, etc., provide important knowledge for use in medical practice. For this reason these sciences collectively have been conveniently called "medical" sciences, although they are not exclusively medical. In medical schools, and among physicians generally, there is a growing tendency to refer to these biological sciences more appropriately as "basic," "fundamental," or "preclinical" sciences.

1. The "medical" sciences have been developed chiefly by persons who have not been educated for medical practice. Bacteriology, for example, was founded by the scientific work of Pasteur, a chemist. It is not necessary for bacteriologists to become physicians or surgeons before qualifying as experts in teaching and research in bacteriology in *medical schools*. *Most of the active teachers of "medical" sciences in medical schools have been specially trained for their duties in these sciences, and have not received the M.D. degree.* A large proportion of these teachers have been awarded the Ph.D. degree.[3]

(a) Teachers of medical sciences satisfactorily teach and practice their specialties in medical schools without having received the instruction required of candidates for the M.D. degree. Why then should it be assumed that dental students' in order satisfac-

[3] While the printer's proof of these notes was being corrected, the present writer learned that one of his colleagues in this medical school included the following statement in a recent address: "At the present time over half of the professors of the medical sciences in this country, and a still larger percentage of the essential contributors to them, are not medical men in the *strict and old-fashioned* sense. This shift in personnel means to me two things; namely, that *these sciences are becoming increasingly autonomous* and important in their general relations, and that they are becoming "purer," by which we mean that their main objectives are theoretical and fundamental *rather than practical and applied.* These medical sciences, anatomy, physiology, bacteriology and biochemistry, have widely assumed general university importance *as educational disciplines*, alongside physics, chemistry, zoölogy and botany, and *are no longer simple handmaidens of clinical medicine.*" [Italic not in original.] (*F. P. Gay, M.D.; Science*, 1932, lxxvi, p. 111; Aug. 5.)

torily to practise dentistry, must receive all the instruction required of candidates for the M.D. degree?

(1) If it were desirable, necessary, or possible to learn everything before doing anything, how could any living physician conscientiously practise any phase of medicine? The M.D. degree, at the time of its award, suggests the possession of greater knowledge, wider powers, and more ability to meet serious responsibilities than is warranted by the formal instruction on which the degree is based. The disagreement in these respects is greater than for any other degree. Most physicians, with becoming modesty, recognize this disparity, and endeavor earnestly, through study and experience, to bring the implications and realities into accord. A physician at a commencement, addressing a class of dental students, said complacently that the D.D.S. degree is a "badge of *partial* culture." Did this speaker's remarks, or his M.D. degree—or would any other degree or any set of degrees—represent *complete* culture? Only a few physicians, failing to realize their limitations, magnify the difference between their professional education and that for the D.D.S. (D.M.D.) degree in the better dental schools. It would be unfair to judge medical practice by the inefficiency of its most inept representatives. Sincere physicians, evaluating dental practice, do not compare the best in medical practice with the worst in dental practice.

f. The "medical" sciences are often erroneously assumed to constitute collectively the "*science of medicine.*" They contribute much to, but collectively are not, the science of medicine. The *science of medicine* contains not only the parts of the "medical" sciences that are related to medical practice, but also that additional body of knowledge which, peculiar to the clinical aspects of medical practice, is not included in any of the "medical" sciences. The *science of dentistry* also consists of much more than an aggregation of parts of "medical" sciences. Among dentists the "medical" sciences are often conveniently called "medico-dental" sciences—another provincial term.

2. Individually each "medical" science "belongs" unreservedly wherever in any field of human interest it may be applied. When "medical" sciences are used in fields other than medical education or medical practice, this medico-provincial name is lost. Thus, when used at a college of agriculture, in teaching or research, these sciences are not called "medical" sciences. *The use of "medical" sciences for the development of agriculture does not convert agriculture into a division or branch of medical practice.*

g. The use of "medical" sciences for the development of dentistry makes dental practice more scientific and therefore more efficient, but does not change dental practice into medical practice. When results of research at an agricultural experiment station in, say, biochemistry—a "medical" science—are useful in medical practice, physicians do not label these results "agricultural" science. Physicians apply such results freely for human

betterment as scientific data of value in medical practice—as *parts of the science of medicine.* This is correct and very desirable, but such use of facts established at an agricultural experiment station does not convert a physician into an agriculturist. On the same principle, any fact in any "medical" science, or in any part of the science of medicine that is useful to dentists, may be appropriately used in dental practice, but such usage does not convert a dentist into a physician.

3. Results of recent biochemical research, as published in papers from an industrial laboratory and an agricultural experiment station, indicate that mottled enamel is caused by excessive proportions of fluoride in drinking water in districts where this dental lesion is endemic. No physician participated in this useful discovery. After important preparatory clinical and scientific work by dentists, the facts were ascertained under industrial and agricultural auspices. These conditions of discovery do not restrict to industry and agriculture the prevention of mottled enamel, nor do these circumstances convert such prevention into "scientific" industry or agriculture. These scientific results "belong" wherever they can be advantageously used.

(b) Physicians will regard the important discovery of the cause of mottled enamel as an addition to a "medical" science, and will use the discovery as such. They will also include the facts in the *science of medicine.* In the broadest import, however, the discovery signifies that another stone has been placed in the structure of the sciences on which *all forms of health service rest*—basic sciences that have not in any sense been organized or reserved for the exclusive use or exaltation of any division of health service ("medicine").

(2) The prevention of mottled enamel, while primarily within the scope of scientific dentistry, has become largely a matter of water-works engineering and public sanitation under the guidance of the dental profession. This is one of many instances that emphasize the importance of dental membership in health boards.

h. When "medical" sciences are taught to dental students in laboratories in a *medical-school* building, the name or classification of that building does not affect either the character of the science taught or the quality of the knowledge acquired. The effectiveness of the instruction, not the *name* of the building, is the essential thing. Successful research in a "medical" science, nutrition for example, does not become a contribution to medical practice merely because that science is *called* a "medical" science. Often the results of research in a medical science, conducted chiefly by workers who are not physicians, are useful only in fields other than medical practice.

i. The expression, "There should be more medicine in dentistry," is commonly intended, when sincere, to mean *there should be more of the "basic" sciences in dentistry.* Stated purposes to promote dentistry "*through medi-*

cine" are usually intentions to advance dental science and practice by more effective applications of "basic" sciences and clinical medicine, although occasionally the benefits expected for dentistry are analogous to those derived by canaries in passing *through kittens*.

V. DENTISTRY IS A NATURAL DIVISION OF HEALTH SERVICE ("MEDICINE"), NOT A SPECIALTY OF MEDICAL PRACTICE

The belief of some that dentistry should be made a part of medical practice is based on the fantastic assumptions that medical practice is perfect, and that imperfections in dental practice would automatically disappear with its absorption into medical practice

D. Dentistry is a natural division of health service ("medicine"), but not a specialty of "medical practice" as the latter is defined by statute. The centennial anniversary of dentistry's birth as a profession in North America will be celebrated in 1939–40. For more than ninety years, dentistry in the United States and Canada has been a separately organized profession, and has been steadily developing on its own system of professional education.

j. There is little evidence to support the assumption that, in Canada or the United States, dental practice would be more useful if it were made a part of medical practice and its development put in charge of organized medicine. The available evidence in support of this assumption is about as strong as that in behalf of the similar presumption—analogous in principle—that the citizens of, say, Rhode Island would be better off, their achievements made more distinguished, and the national welfare promoted, if Rhode Island were converted into a county of Massachusetts.

4. It is certain that each kind of health service would be more effectually practised if more knowledge, which research is intended to provide, were available to it. (Cancer and the common cold in medical practice, and caries in dental practice, are convenient intimations at this point.) This is not the same as saying, however, that any present kind of licensed health service would be made better by subordinating it to the control of a group that has been indifferent to it; or by burdening it with what it could not use; or by giving it a new name.

k. Dental practice, wherever nationally included in whole or in part in medical practice, has failed to advance to the degree attained in the United States and Canada under the guidance of a profession separately organized to further it.

5. The Carnegie Foundation's *Bulletin on Dental Education* (1926) contains these statements (p. 210): "A Canadian dentist of international repute . . . . [wrote that] in Great Britain and Europe, generally, dental education has been under the control of medicine. . . . . This has resulted in a scientific training better than that given in most of the dental colleges in North America . . . . [but] there have been two disadvantages: the work has not been directed toward the practice of dentistry, nor . . . . applied directly to the teeth and surrounding tissues; and dental students . . . . have not received the same attention [as medical students] nor has the same grade of work been required of them. There has been a lack of development on the operative and prosthetic side, which has prevented the average practitioner in Europe from giving as good a service in the replacement of lost tooth-tissue compared with the average dentist on this side . . . . (1924–25). . . . . [One of the leading dentists, in the United States, who also holds the M.D. degree and has had wide experience in Europe, independently recorded these views]: In the medical sciences many of the foreign universities apparently give better instruction to dental students than they receive on the average in this country, but in the technical branches, the training in our schools is far superior to that of European schools, primarily because of the lack of opportunity in foreign schools for clinical experience in the finer technical procedures. The foreign dental student lacks opportunity for broad clinical training largely because of medical control of dental education. . . . . The dental faculties abroad appear to be so subordinate to the medical that they do not succeed in giving the dental student technical training, either in the laboratory or clinic, comparable to that of the schools in the United States and Canada (1924–25)." No one has challenged the correctness of these statements in the Carnegie Foundation's *Bulletin on Dental Education.*

6. The dean of a Class-A dental school in a state university, after a year recently spent in Europe, included the following comment in a paper on "trends of dental education," etc.: "In the four countries in Europe—Austria, Czechoslovakia, Belgium and Italy—where one must possess a medical degree to practise dentistry, the poorest type of technical dental service is to be found. In Switzerland, Sweden, Norway and parts of Germany, where dentistry is taught in conjunction with medical studies, yet independent of medical supervision, as we teach it in this country, the best type of service is found. Based on my own study of the problem in Europe [1926–27], I would both seek and recommend the services of dentists trained in the latter countries during the past decade and would avoid service in the former, unless I knew the dentist and his work personally." (*Pacific Dental Gazette, 1931, xxxix, p. 415; June.*)

7. The views quoted in *sub-sections 5* and *6*, above, have been confirmed, in a presidential address lately delivered in England, by comment in part as follows: "The Tree of Healing has many branches—medicine, surgery, dentistry, midwifery, massage, radiography, etc. All grow from the parent stem, some of the branches being bigger and more important than others. Emphatically, dentistry is a branch and not a mere twig growing on that of medicine, and I contend that the attempt to make it so is responsible for the miserably low standard of dentistry in this country. The dental profession is completely lacking in self-reliance after all these years of subservience and dependence, and is like a flock of bewildered sheep, harassed on every side by conflicting interests. . . . . America the world over holds the premier position in dentistry. We in this country seem to be quite content to follow in her train—making use of her ideas and her appliances. Can you think of a single article of modern surgery equipment which did not originate in the States, and where do you have to go if you want the very best? . . . . Why is it that in dental affairs England is so far behind America? It seems to me that the reason lies in the control of dentistry by the medical profession. . . . . To adopt a railroad simile, dentistry [in England] has got on to the wrong line. Instead of a dental train controlled by a dental staff, running on its own lines, the dental profession is relegated to a van at the tail-end of the medical train, with practically no choice as to its destination." (*Hubert C. Visick, Presidential address; Southern Counties Branch of the British Dental Association, Journal of Dental Research, 1932, xii, p. 585; August.*)

E. It is sometimes suggested that misjudgments or mishaps in routine dental practice are frequent, and that these would not occur if oral health-service were performed exclusively or directed by "oral specialists" having the M.D. degree ("stomatologists"). This fantasy is not shared by sincere and experienced physicians, who know that inherent and unavoidable deficiencies have not yet been removed from even the most advanced medical practice.

1. Much research is needed for the perfection of medical practice and of dental practice. Research is the common soil from which all kinds of health service grow. The need for cumulative research in oral health-service would not disappear, if dental practice were included in statutory medical practice.

F. Organized medicine has been traditionally inattentive to the development of dentistry—to the prevention and treatment of the

abnormalities and diseases of the teeth and adjacent oral tissues, and to the correlations between oral and systemic conditions. This inattention indicates that, if dentistry were included in statutory medical practice, dental practice would be relatively neglected, and especially that the mechanical and esthetic features of oral health-service would not attain their most desirable further improvement and development.

m. On this subject the President of the Eighth International Dental Congress in Paris, in 1931, spoke very pertinently as follows: "Medicine had long ignored the specialty of dentistry, not sufficiently realizing its importance from a pathological and physiological point of view, and only recently discovered teeth to condemn them. It is therefore to practitioners in the dental art that progress in that art is due. It is through them that the full importance of dental hygiene and its influence on the general health has come to be recognized; it is they who have perfected therapeutic restorations and conservations to an extent rarely met with in other specialties. It is thanks to their devoted and persevering work that the effects of diet on the health of the teeth have been realized, and that it has been possible in controlled conditions to reduce dental caries to negligible proportions. It was not sufficient to point out the evils of focal infection; it was necessary to master it, and dentists have been able to establish techniques to attain this end." (*Georges Villain: Dental Magazine and Oral Topics, 1931, xlviii, p. 934.*)

G. Measures for prevention, and for the application of principles of medical practice, are fundamental in dental service, and wherever possible should have precedence over all procedures. The mechanical and esthetic requirements of dental practice are also essential, and are becoming increasingly exacting as the corresponding intra-oral procedures multiply and attain greater complexity.

n. The intricate methods for the difficult mechanical and esthetic phases of dental practice would not, in fact cannot reasonably, be included in the general training of physicians. These methods have been, and further can be most effectively, developed by the separately organized profession that naturally makes their continual betterment one of its main purposes.

o. Diagnosis is a basic procedure in dental practice, but treatment is, and will remain, an essential phase. In dental practice knowledge of the "medical" sciences can, *in the main*, be applied to *treatment* in proportion

only to the practitioner's *technical* ability. If however the practitioner has slight knowledge of these sciences *in their relation to dentistry*—as would be the case with an uneducated technician in intra-oral practice "directed" by a "learned" physician ("stomatologist")—his *technical* ability, however exceptional, could not be applied for the most effectual treatment.

8. The element of *judgment* is an essential factor in such seemingly "simple" operations as preparations of cavities for fillings, because many atypical cases occur. An uneducated technician would destroy many teeth, or set up numerous infections, or both, because of lack of knowledge on which to base the judgment required in such treatment. In a recent paper in the *Journal of Dental Research* (1932, xii, p. 670), Dr. A. T. Rowe, of the School of Dentistry of Columbia University, said: "The most rudimentary thing that is done in dentistry may, if improperly done, be fraught with serious consequences." He concluded the paper with the assertion that "there is no simple dentistry."

H. If dentistry were included in statutory medical practice, dentists ("stomatologists") would then also be free to engage in general medical practice. There are no convincing indications that the requirements for the practice of medical specialties will not continue to include a license to engage in general medical practice. These facts, under the hypothetical conditions indicated, would naturally tend to encourage aging dental practitioners to discontinue the more exacting dental practice for much easier work in general medicine, and thus to substitute, for competence and experience in the dental field, incompetence and inexperience in medical practice. This is, in fact, one of the reasons why some dentists favor, and why all laymen should oppose, the inclusion of dentistry in medical practice. (In the United States there are now nearly half as many dentists as physicians.)

p. To avoid increased economic competition among medical practitioners, and to allay apprehension among physicians in this regard, it has been intimated that, if dentistry were made a part of statutory medical practice, the medical faculties could, and would, wisely restrict physician-dentists ("stomatologists") to a very small number, to be assisted in "routine" dental practice by a large number of technicians.

9. It has been suggested that intra-oral dental service be "directed" by a few physician-dentists but performed by many *uneducated* technical assistants, the latter to be multiplied to insure a maximum of competition among them as employees or subordinates of physician-dentists ("stoma-

tologists"). On this plan one physician-dentist could, it is said, "easily" direct twenty technicians, and the 66,000 dentists in the United States at present would ultimately be replaced by approximately 3,000 masters and 63,000 servants. This plan is obviously expected to meet current economic objections, among physicians, to the absorption of dental practice into statutory medical practice.

(c) How this "master-servant plan" would be financed in the dental clinics to be established "all over the country," and the means by which these clinics would be kept filled and the servants profitably employed in each, have not been suggested. If this plan were desirable for dentistry, why should it not apply also to general medical practice, to surgery, and to the specialties of medical practice? It is interesting to note that physicians who generously favor this plan for dental practice do not advocate it for medical practice.

(3) The "master-servant plan" was *devised* to break dentistry into two parts, the "preferred" stock to be transferred to Medicine, Inc., the "common" to be thrown on the market. It is said that this plan was *revived* from a desire, in part, to provide *good* dental service at *low* costs. But no facts are available to suggest that this plan would afford *good* service at *low* costs. Revolutionary changes in any service so fundamental as dental practice should be predicated not upon the inferiority complex of some unhappy dentists who wish they were practising physicians (which they could become by meeting the requirements), but upon thorough preliminary investigation, extensive data, and logical reasoning from the available facts. Fact-finding studies have been much more valuable, in every field, than the opinions of facile or disgruntled guessers. The "master-servant plan," in any instance of its execution, would present a complex social problem, involving factory organization and management, labor organization and labor laws, conditions of unemployment, production costs, employer's liability, apportionment of work, forseeing "the state of the market," difficulties relating to the individual workers, use of workers' time to avoid waste, etc., etc., the effective and economic control and adjustment of which would ordinarily be beyond the interest and understanding of the supervising physician-dentist ("master"). Possibly, however, his uneducated assistants would receive so little in wages, and he would make so much money, on this plan, that he could afford to employ a factory manager and related assistants to relieve him of all this annoying responsibility.

I. Only a few medical schools have sought to absorb or control dental schools. Most medical faculties, owing largely to lack of understanding of the scope and import of oral health-service, are strangely unwilling to teach medical students even the "medical" part of dentistry.

q. Of the eighty-one medical schools in the United States in 1929–30, only fifteen gave required instruction in oral hygiene, clinical dentistry, or oral surgery. The total time-allowance ranged between 4 and 15 clock-hours (average, 8 clock-hours) in four years. In 1924–25 nine medical schools

gave such instruction—a gain of six schools in five years. In some cases this instruction is general and superficial, and almost worthless.

10. If interest in the "medical" part of dentistry continues at its present rate of growth in the medical schools in the United States [q], and if the number of these schools remains practically the same, it may be expected that by 1985 all the medical schools in this country will devote, to required work in dental and oral relationships, an average total of 8 clock-hours in the entire undergraduate curriculum.

J. Organized medicine has lately been giving special attention to prospective statutory requirements in graduate work for the practice of a medical specialty, all of these specialties having been seriously neglected in this respect. The Association of American Medical Colleges has endorsed (1931) the following four *minimum* graduate requirements, as recommended by a special committee (for *voluntary* adoption by medical schools): (*a*) Graduation from a recognized medical college; *plus* (*b*) a one-year interneship, which should include general clinical work; *plus* (*c*) a one-year residency, which might be in a broad special department, such as medicine, surgery, gynecology and obstetrics, and might consist of an assistantship in a pre-clinical department, such as pathology, physiology, etc.—in lieu of the residency, the requirement might be three years of experience under supervision, or five years in general practice; *plus* (*d*) not less than two years of graduate clinical work under the supervision of a university. The candidate should be required to take, *in addition*, sufficient training to attain superior knowledge in the fundamentals that underlie diagnosis and treatment in his clinical field.

r. If dentistry were made a specialty of medical practice, it is highly improbable that the educational requirements for dental practice would be less than for the other specialties. The *minimum* time needed to complete the foregoing approved schedule in preparation for a specialty of medical practice ranges from ten years to twelve years after graduation from a high school, according to the number of years in an academic college required for admission to the medical school.

11. The exactions of the foregoing requirements, in *minimum number of years after graduation from a four-year high school*—to consider only one general condition relating to them, are these: *Item 1.—Graduation from a recognized medical college.* Admission to a recognized medical school

requires at least two years of pre-medical work in an academic college—many medical schools require at least three years, an increasing number require four years, *for admission*. In most schools the M.D. curriculum extends through four years. Therefore, this first requirement ordinarily demands 6 to 8 years after graduation from a high school, varying with the number of years of premedical college-work for admission to the medical school. *Item 2.—A one-year internship is included.* The total, after graduation from a high school, is now at least 7 to 9 years. *Item 3.—A residency, for at least one year, must also be served.* This makes the count of years at least 8 to 10. *Item 4.—At least two additional years must be devoted to graduate clinical work.* This runs the count of years, after graduation from a high school to approval for the practice of a specialty, to a total of at least 10 to 12 years. Would this be a desirable or practicable plan for dentistry, now or in the near future?

(d) In the situation created by the requirements stated above, the proposal to convert dental practice into a specialty of medical practice cannot be regarded as a practicable or plausible measure so long as those who favor it ignore the first two of the following four essential conditions: (1) Persuade organized medicine to believe, and agree through its authorized representatives, that dentistry should be made a specialty of medical practice. (2) Ascertain the minimum requirements in general education and professional training on which organized medicine would welcome dentistry as a specialty of medical practice. (3) Persuade organized dentistry to coöperate in making the change. (4) Persuade the legislatures of the individual states to ignore the economic conditions involved, and to amend the dental statutes in such a way that dentistry would be made legally a specialty of medical practice on the foregoing minimum requirements.

(4) It is often said that because teeth are parts of the body, and their health and function are important, professional efforts to maintain or restore their normal condition, i.e., dentistry, *must* be a specialty of medical *practice*, and cannot be anything else. Proponents of this idea confuse "medicine" with "medical practice." Dentistry is clearly a division of "medicine"—here logic determines. But dentistry is obviously not a specialty of "medical practice"—here expediency determines—because, in sensible recognition of dentistry's unique requirements, it is *licensed* to be something else. If dental practice is a specialty of medical *practice*, merely because teeth are parts of the body, then dietetics, physical education, hair cutting, etc., are specialties of medical practice—and by the same logic, a mother's nursing of her baby, and her service of meals to her family, are specialties of medical practice and she ought to be required to obtain the M.D. degree before being permitted to do either. Whether dentistry should be made a part of medical practice, or maintained in its separate status as a division of medicine, is a question that must be answered on the basis of realities, in the interest of all concerned, among which the public is plainly the party of the first part.

(5) The teeth are the only parts of the body that have been singled out as a separate domain of expert practice, which, for a number of reasons, may not be formally conducted legally by a physician, without a special license. Among the reasons are these: Teeth are almost wholly devoid of capacity for peripheral self-repair, *which emphasizes*

the paramount importance of measures for the prevention of dental disorders, especially in children. The protective enamel, after injury, does not heal; after removal, is not restored. The most prevalent dental disorders are usually not *curable* with drugs; but once under way can, as a rule, be remedied or repaired solely by mechanical means. All the teeth can be removed without serious effect on the functions of the jaws or on the welfare of the body, so far as the removal itself is concerned; for, unlike the many organs of chemical coördination, the teeth secrete nothing of any functional value elsewhere in the body. Sanitary substitutes for natural teeth, and for parts of a tooth, can be adapted for comfortable and effective maintenance of the dental functions. The *concurrence* of these biological conditions; namely, relative incapacity for self-repair and incurability by medicinal treatment, ready recovery from the effects of total loss of teeth and their non-participation in systemic chemical coördinations, and adequacy of the functional restoration attainable by artificial replacement—conditions that do not apply *collectively* to any other part of the body supplied with blood and nerves—explains in part the traditional unconcern among physicians regarding the teeth, and largely accounts for the development and maintenance of dentistry as a separately organized profession.

(6) The so-called stomatologic movement in North America has been only an agitation up and down, and not a forward march, because the plan is not realistic. Its proponents have carried their crusade to the rear instead of the front. The "front" in any stomatological crusade in the United States is the medical profession, not the dental profession, and certainly not the public. Why is it that the stomatological plan—rejected by medicine nearly one hundred years ago, and revived, we hear, in 1923—has not been placed before official representatives of the organized medical profession for formal consideration and decision? What is the significance of this striking omission? In 1925 the Section on Stomatology of the American Medical Association—a Section in continuous existence for forty-four years—was disbanded. If the discontinuance was due to intrigue, selfishness, or perversity—as is sometimes intimated—why has nothing been done since 1925 to remedy the situation? Where were the stomatologists, among the physicians, when this Section faded out? More important than the last question: Why have these stomatologists not revived this Section? Why does not the so-called stomatological movement include a plan to resuscitate the Section? Dentists, earnest and self-respecting professional men, should not try to *force* dentistry into conventional medicine, and should not be made to appear as endeavoring to accomplish this result. If the organized medical profession is to be the host, why should the guest extend the invitation?

(7) There have been "physician-dentists"—men holding both the M.D. and D.D.S. (D.M.D.) degrees—for nearly one hundred years. Today any dentist wishing to obtain a medical training is wholly free to do so. Any physician wishing to obtain a dental training has the same unrestricted opportunity. Why is it that the number of men who hold both the M.D. and D.D.S. (D.M.D.) degrees is much smaller now than it was, say, 20 years ago? Have common sense, improved professional education, and economic conditions taken a hand in this situation? [U, i, (11–12)]

(8) Since 1921 the author has often publicly suggested the following among proposed improvements for the full attainment of the service equivalence of an oral specialty of medicine, *by dentistry continued in its separate organization*: [There should be] "development of combined dental and medical curricula, with adequate dispensary and hospital facilities, for united medical and dental training of specialists in maxillo-facial surgery,

public-health administration, medico-dental research, and, in general, *of practitioners of the types of oral health-service that embrace most intimately the joint responsibilities of medicine and dentistry*; academic and professional degrees to be awarded in accord with the nature of the study concluded and the achievement therein." *Since 1929 the Yale Medical School, with the aid of grants from the Rockefeller Foundation, has been testing this specific suggestion.* Meanwhile, at Yale, four dentists have been helped financially to study medicine, and ultimately to become physician-dentists. A determination of the nature and quality of the results of this important experiment at Yale, including the efficiency and public usefulness of the *physician-dentists there trained for dental practice*, is awaited with interest.

(9) In a report on dental graduate study and research in Canada and the United States, at the last general meeting of the International Association for Dental Research (1932), the present writer said: "The conditions at Rochester, New York, appear to be more favorable for graduate study and research, and for intellectual and scientific leadership, in dentistry, than in any other *medical* school in North America. . . . 'At Rochester there are now eight Rockefeller Fellows in Dentistry. . . . [They] are entirely free to conduct studies of their own selection. They may register for the Ph.D. degree, and will receive it when the character and extent of their work meets the requirements established by the University for the award of that degree. . . . *The Fellows are not encouraged to become candidates for the M.D. degree. It is believed that men who conduct graduate work in dental relationships, on the plan at Rochester, will not only retain their interest in dentistry* but also develop a greater capacity in dental practice or a cumulative ability in dental science, and become unusually effective as teachers and investigators, especially in schools of dentistry.' The Dean of this Medical School [Dr. G. H. Whipple] has recently expressed the following opinion, which is particularly significant in this connection [*N. Y. Journal of Dentistry*, 1931, i, p. 159; April]: 'I think it unlikely that physicians, unless they have a particular interest in the border subjects between medicine and dentistry, will maintain a permanent interest in dental research. This interest may be fostered for a period of special grants, but after these grants are used up or the individual matures, he will probably revert to medicine and not be a permanent investment for dentistry. . . . The nucleus of . . . [the] research group [for the advancement of dentistry] in my opinion must be dentists who have had the dental training and have a permanent interest in this field, who have taken the time to get additional training in some of the pre-clinical sciences. This of course corresponds to the make-up of the pre-clinical science group in medicine today. I feel a strong conviction, therefore, that individuals who would help dentistry should first help to develop research workers with dental training and dental interest.' "

s. The Associate Dean of the Medical School of Columbia University, where the above-mentioned graduate requirements are now in voluntary operation, recently expressed these opinions at a meeting of the Association of American Medical Colleges (1931): "Medicine and medical education have troubles of their own which will not be alleviated by attempting to swallow whole another profession; a profession [dentistry], which, by and large, does not want to be engulfed. And a profession like dentistry, with a hundred-year history, deserves to have its feelings considered. You

may call dentistry a specialty of medicine, but that does not make it so; and it is none the less valuable for that fact. I can see no reason why the degree, Doctor of Dental Surgery, honestly held and honorably upheld, should not in the future deserve equal respect and esteem from the public with the degree of Doctor of Medicine, provided it is held by a similar type of man. And whatever their future relationship may be, let medicine and dentistry now go forward side by side as friendly collaborators in the estimable undertaking of offering help to those who need it and adding to the happiness of life as much as to the length of its span." (*F. T. Van Beuren, Jr., A.B., M.D., Journal of Dental Research, 1932, xii, p. 249; April.*)

t. The Dean of the Medical School of Washington University expressed these views at a meeting of the American Association of Dental Schools (1931): "Nothing is to be gained by converting a first-class dentist into a mediocre medical practitioner. . . . . I do not believe it is practical to unify the dental and medical curricula so as to provide for the same training of dentists and physicians during any considerable part of their academic careers. . . . . Dentistry is a very specialized field of medicine which has already been elevated to a standard of professional excellence entirely comparable with that of other medical specialties. *The average American dentist is at least as well qualified to render adequate service in his field of work as is the average otolaryngologist, ophthalmologist, or surgeon.* [Italic not in the original.] Dental education in America has been notably effective, and that is to the credit of the profession. . . . . Changes should not be made at the expense of that which has been found good through long practical experience. . . . I am . . . . entirely unconvinced that any plan for the unification of the dental and medical curricula would result in the training of better qualified dentists. Dentistry is a profession which has become firmly established in its own right, and one which comprises a number of specialties. *It would lose much by becoming a minor subdivision of medicine.* [Italic not in the original.] It had best retain its independence." (*W. McKim Marriott, M.D.: Journal of Dental Research, 1931, xi, p. 807; October.*)

VI. DENTISTRY SHOULD BE, AND IS BEING, DEVELOPED INTO THE FULL HEALTH-SERVICE EQUIVALENT OF A SPECIALTY OF MEDICAL PRACTICE

This equivalence can be attained when dentistry as a whole, continued as a separately organized profession, is given the scientific and practical qualities it might acquire under advantages equal in character to those available to the most favored specialty of medical practice

K. Dental practice, to attain its greatest usefulness in health service, should be given all the scientific and practical qualities it might acquire under the greatest possible opportunity—such qualities as it would gain if it were advanced, for example, under advantages equal *in character* to, but not necessarily identical with, those that are, or will be, available to the most favored specialty of medical practice.

u. Dentistry can be made the full *health-service equivalent* of an oral specialty of medical practice, through (a) intimate coöperation among dentists, physicians, and other types of accredited practitioners, in private practice, in hospitals and dispensaries, in health boards, etc.; through (b) instruction and research in dental schools closely coördinated with medical schools, hospitals, and dispensaries; (c) *without obliging the prospective practitioner of dentistry to take any of the undergraduate work required for the M.D. degree that would be redundant or irrelevant for general dental practice;* and (d) on a *system of adapted graduate requirements* that would correspond with the exactions of the practice of the dental specialties.

12. Dentistry, to attain the full health-service equivalence of an oral specialty of medical practice, must understand and exemplify the related scientific principles of the best medical practice. To this end, dentistry must also observe the corresponding requirements of "clinical medicine," which *include* recognition of the known conditions or disorders that, in the interest of the patient, may affect a dentist's procedure or be influenced by them. The most important general purpose in medical practice should be to *keep people healthy.* Unfortunately, this purpose has not been dominant in medical practice. In this respect, dental practice has been in the van. For many years dentists have systematically encouraged their patients to submit to periodic precautionary examinations for the diagnosis and treatment of dental disorders in their incipiency, and for the application of direct measures of oral hygiene. The importance of this procedure for children, in whom most dental abnormalities and diseases may be arrested, cured, or corrected, cannot be overstated. These efforts by the dental practitioner, to discover promptly the incidence of oral maladies and to prevent their extension in his patients individually, exemplifies an ideal of health service—*to keep people well*—that has not yet appealed strongly to the average medical practitioner, who, manifesting little concern about prevention of illness among his private patients, seldom gives them personal advisory health-service when they are not sick. This notable difference between the direct efforts of dentists and physicians, in which dentists have set a useful

example by endeavoring to convert a passive aspect of health service into an active phase, suggests an opportunity for marked improvement of medical practice in harmony with the popular expectations that are being aroused by progressive public education for the conservation of health, in which physicians, dentists, nurses, and laymen are actively participating.

L. Dental practice (whether by general practitioners, or specialists) *includes* the opportunity and the obligation, based on adequate training, to (1) *detect* oral symptoms of abnormalities within the closely related domains of dermatology, laryngology, neurology, ophthalmology, otology, and rhinology, and of some pathological conditions in other parts of the body—also symptoms of various systemic ailments, and of communicable maladies; to (2) give the patient *advisory* health service on (a) the need to obtain the opinion of a physician about such observed conditions, and also on (b) dietetics, hygiene, and the prevention of diseases; and to (3) *consult* effectively with physicians and other accredited practitioners in the patient's behalf.

v. An expansion of dental service by dentists in coöperation with physicians, in practice and in professional relationships in general, would favor continuous improvement of all the dental facilities employed to further the welfare of the patient.

w. A closer affiliation between dental schools and hospitals (and dispensaries) would facilitate desirable expansion of the dental service in the latter; and would also bring about improvement of the clinical instruction of both medical and dental students.

M. Dentistry, in the extent and content, and in the quality and efficiency, of its health service for the patient, can be made the full equivalent of an oral specialty of medical practice, including the greatest attainable usefulness in mechanical and artistic reparative measures, without requiring the dental student to "take" the redundancies and irrelevancies of a curriculum for the M.D. degree. This evolution can be accomplished by pursuit of three main educational objectives as follows: (a) The preliminary education as well as the instruction in the basic ("medical") sciences should be practically the same in general character as for the medical student, although not identical, and with ample opportunity in adapted courses for due dental emphasis. (b) The training peculiar to dentistry should be

sufficient to assure ability to *initiate safely* a dependable modern *general* practice of dentistry, *capacity to grow in proficiency*, and inclination to *continue in study and in self instruction*. (c) The most advanced phases of dental practice should be reserved for optional systematic graduate work of high grade by prospective specialists, such as oral surgeons, orthodontists, dental teachers, etc.

x. *These three objectives are attainable in a variety of ways.* In the Carnegie Foundation's *Bulletin on Dental Education* (1926) it was suggested, from general observations, that this evolution could be brought about advantageously through these three requirements: (1) at least two years of approved work in an accredited academic college, including several extra courses or procedures that would stimulate interest in the practice of dentistry and test aptitude therefor; (2) at least three years of intensive and well-integrated effort in an undergraduate dental curriculum for the training of *general practitioners only*, the years to be *lengthened by beginning them with summer sessions, or otherwise, wherever the time-equivalent of four professional years of conventional length is regarded as essential;* and (3) at least one year of optional, graduate work of high grade for advanced training for *all types of dental and oral specializations*, including teaching and research—this advanced work to follow directly after graduation, or preferably in most instances after experience in general practice.

13. The suggested lengthening of the years of the undergraduate dental curriculum, attainable by their sub-division into "quarters," would prevent long interruptions in the digital training. It would also enable the general practitioner to begin his professional service one year earlier than is possible on the 2–4 plan (where the time-equivalent of four short years is regarded as essential). An added year of immediate graduate work for specialists (where general practice would not be a necessary prelude) would not delay the beginning of the service of specialists beyond the requirements of the conventional 2–4 plan.

y. Since March, 1930, the American Association of Dental Schools has been conducting a special study of the desirable content, structure, and reorganization of the dental curriculum, to ascertain all the details of relevant facts on which further improvement in the courses and teaching in dental schools may be made under the advice of that Association. A committee of the deans of five dental schools in the United States and Canada, assisted by an executive secretary and several educational consultants, are now actively engaged in this work, which will probably be in progress for several years before a final report can be presented to the Association.

VII. IT WOULD BE DESIRABLE TO CONVERT DENTISTRY INTO A SPECIALTY OF MEDICAL PRACTICE, IF THE SEPARATELY ORGANIZED DENTAL PRACTICE COULD NOT BE MADE THE FULL HEALTH-SERVICE EQUIVALENT OF SUCH A SPECIALTY

Only extraordinary conditions that could not otherwise be met would justify the discontinuance of the dental profession, now in its ninety-fourth year as a separately organized division of health service

N. Dentistry can be made the full *health-service equivalent* of an oral specialty of medical practice, and can be most effectually sustained as such, by maintenance of the present evolution of dentistry as a separately organized profession.

z. Separate organization does not require aloofness, but may promote intimacy and close correlation with other organized groups. Continuance of the separate organization of dentistry does not imply hostility to anything, and should not cause discord or unpleasantness between, say, dentists and physicians.

14. The medical and dental professions are steadily becoming more closely allied. The separate organization of each profession has not prevented this desirable growth of accord, which undoubtedly is based on increasing mutual enlightenment, understanding, and respect. Continuance of separate organization should not interfere with the development of closer agreement and coöperation between the two groups of practitioners.

aa. If separate education and organization expressed or implied hostility or discord, why, for example, have schools or departments in universities been separately organized, and why have anatomists, bacteriologists, biochemists, physiologists, etc.—educated in accord with their functional requirements—been separately organized into national societies? Intimate collaboration among these separately organized workers is common where their interests are related or overlap.

15. Separate organization of schools, of departments, and of representatives of basic ("medical") sciences arises not from destructive feelings of animosity. but from constructive purposes to promote interests and causes that would not be so effectively advanced if they were not furthered by organization, and were dependent merely upon the spontaneous activity of individuals less attentive to them and having more intimate concerns. This is clearly the essential purpose and condition of all constructive organization—to give *intensive and sustained atten-*

tion to interests or causes that would be relatively neglected without such organization.

bb. Dentistry, as a separately organized profession, will soon be 100 years old. At this age, its discontinuance as a separately organized profession would be justified only by extraordinary conditions *that could not otherwise be met.* Such conditions have not arisen in North America.

O. It would be desirable to convert dentistry into a specialty of medical practice, and to discontinue its independent status, if dentistry could not satisfactorily be made the full health-service *equivalent* of such a specialty, and if this conversion would assuredly make dental practice more efficient than it is, and will be, as a separately organized division. Current conditions in medical practice do not support these assumptions.

cc. Those who advocate the conversion of dentistry into a specialty of medical practice base their preference partly on these assumptions. These advocates fail, however, to indicate a practical method by which the conversion could be brought about, and organized medicine persuaded to proceed with it.

dd. Nothing in the history of medical practice or of medical education suggests that dentistry in America would have achieved its present development and serviceability, if the separate organization of dentistry had not been effected and maintained.

16. In Canada and the United States, where dentistry is regulated independently by statute in every province and state, there are about 70,000 licensed dentists; 44 dental schools; two national associations of practitioners in general; many national associations that promote continuous improvement in various aspects of dentistry; provincial and state dental organizations; and hundreds of local societies devoted to the cumulative betterment of dental practice. The total number of active representatives of all the various specialties of medical practice in the United States is less than one-third of the total number of dentists. The agencies for the direct support and improvement of the specialties of medical practice are very few compared with the many for dentistry. The reasons for this striking difference account, in part, for the fact that dentistry had been growing as a separately organized profession; they also suggest why dentistry should continue as such. [J, 11]

P. Maintenance of the separate organization of dentistry, including the dental schools as units in professional education, will assure for

oral health-service the sustained and intensive attention it merits. *Dentistry would fall into relative neglect if its development were subordinated to other interests.*

ee. Specialists in medical practice, unlike dentists, have not been receiving *formal*, systematic, and intensive education for the performance of their particular functions. This situation, which organized medicine is now seeking to improve [J, 11], indicates what probably would have happened to dentistry *from relative neglect*, if it had been a specialty of medical practice.

17. On this subject the *Carnegie Foundation's Annual Report*, for 1930, makes this statement (page 86): "There is no control over physicians who propose to practise a medical or surgical specialty or who are doing surgery, nor is there any prescribed method of procedure by which they may qualify as specialists. . . . . The courses which are available are inadequate numerically for the large number of men who should take advanced work in order to prepare themselves for the practice of a specialty. *The great majority of men simply have to shift for themselves.* They may work in an out-patient clinic and pick up what they can without proper guidance, or they develop skill on private patients who come to them, or they go to Europe or to one of the postgraduate schools of this country *for a short course.* If they have ability they will overcome all the difficulties and eventually develop into good specialists. This is the course many of our prominent men have followed, but it is unsatisfactory even for them. For men less gifted, *the practice of a specialty resolves itself into the performance of a few typical operations without adequate understanding of anatomy, physiology, or pathology, and frequently they are led to the performance of operations for which they are not trained and which result in a high morbidity or mortality.* Evidently some way must be found, not only to guide along definite lines a young medical man seeking to practise a specialty, but to *compel him to have special training before he is allowed to engage in a specialty. . . . .*" [Italic not in the original.] This statement in the Carnegie Foundation's report was quoted there from "authoritative comment (1929) on conditions in medicine in the United States." (A proposed improvement in these conditions is indicated in Section J.)

(e) The foregoing authoritative quotation may be appropriately referred to those dentists who imagine that there is nothing but supreme excellence or perfection in current medical conditions, and also to those physicians who pretend to believe that dental practice cannot be effective because it is not a specialty of medical practice.

18. The best dental schools now provide a professional education that represents the most advanced formal training, as recognized by statute, for the practice of a specialty of "medicine" (health service).

ff. One of the many striking examples of current unconcern about dentistry, where physicians have authority to control its affairs, was shown recently by the Medical Faculty of Harvard University. This Faculty issued a volume of 194 pages entitled: *Synopsis of the practice of preventive medicine as applied in the basic medical sciences and clinical instruction at the Harvard Medical School.* Despite the importance of preventing diseases that may originate in the mouth, dentistry and all its medical aspects and correlations were disregarded in this important book.

19. The Harvard Dental School "was the first permanent dental school in a university and the first associated with a medical school" (1867). This Dental School is conducted under the general jurisdiction of the Medical Faculty. The full professors in the Dental School are members of the Medical Faculty.

(f) In a commencement address to the graduates of the Harvard Dental School, in 1872, Dr. Oliver Wendell Holmes referred to dentistry as a specialty of medical practice. Dr. Holmes was not only a great physician, but also a distinguished poet and one of America's most delightful humorists.

VIII. THE UNUSUAL MECHANICAL AND ESTHETIC EXACTIONS OF DENTAL PRACTICE HAVE FULLY JUSTIFIED, AND CONTINUE TO REQUIRE, THE ACTIVE MAINTENANCE AND DEVELOPMENT OF DENTISTRY AS A SEPARATELY ORGANIZED PROFESSION

Knowledge of the "medical" sciences can, in the main, be applied in dental treatment in proportion only to the practitioner's technical ability

Q. The unusual mechanical and esthetic requirements of dental practice have fully justified, and continue to require, the active maintenance and development of dentistry as a separately organized profession.

gg. The kind of direct, personal, dental service the individual patient needs—*including advice for prevention, effectual diagnosis, and clinical judgment in treatment*—is now afforded by the modern trained dentist. In the treatment of the patient, the dentist's knowledge of physical and biological sciences, of mechanics, and of esthetics is directly applied, for the most part, by a type of *digital skill* that is essential also in the many

arts and crafts in engineering, and which requires a special biomechanical sense for its exercise. A physician may remove infection from an ordinary superficial wound and, by using antiseptic applications, can safely "leave to Nature" the work of repair and protection against extension of the infection. A dentist cannot, because of deficient powers of self-repair in teeth [J, r, (5)], "leave to Nature" the chief work of protection against infection. In the treatment of caries, for example, he would be guilty of malpractice if he did. The dentist, after removing the infected tissue in a carious cavity, must, *taking the place of Nature*, skillfully and effectually repair the helpless, almost-inanimate tissue with a mechanical substitute. Knowing what to do, and directing the patient or a nurse to do it, is not sufficient in treating dental caries. The dentist must do all the work himself—and with knowledge, judgment, skill, and forethought. The patient's interest requires that details be given attention with microscopic exactness. There is just as much inherent dignity and usefulness in the dentist's mechanical service, *unaided by Nature*, to prevent systemic infection by removing and obviating recurrence of local infection, as there is in any other kind of service for the same purpose where the patient, or a nurse, and Nature do the most important work of conservation.

R. It is likely that the need for mechanical dental treatment will continue indefinitely. It is improbable that progress in prevention will cause dental disorders requiring corrective mechanical intervention to disappear any sooner than systemic diseases that necessitate therapeutic attention.

hh. For many patients, the "prevention" of some dental disorders may, in the long run, be largely a matter only of *delaying* their incidence. "Preventive medicine," for the individual patient, may prevent some diseases without preventing others, and may *postpone* the date of death, but does not change the nature of protoplasm, nor the inherent tendencies and results of the life processes.

20. The foundations of dental health are included in those of general well-being. Among these "foundations" that current information enables dentists to influence, especially in coöperation with physicians, are prenatal development; diet, particularly during the period of growth; and physiological conditions in the mouth from infancy. But, without the inheritance of a constitution and of an oral structure and condition that are favorable, and without advantageous nervous and chemical coördinations in general, which are not yet controllable, the establishment of otherwise perfect conditions of pre-natal development, of diet,

and of dental environment may not repel the early incidence of oral maladies.

(g) Chemical processes are much more active and effective in most parts of the body than they are in the teeth and immediately adjacent tissues. The teeth are therefore less able or likely to take care of themselves, "in the wear and tear of life," than those parts in which metabolism is active. What the teeth lose by functional attrition, for example, is not restored. [J, r, (5)]

S. Dentistry, in its *terminal* (concluding) aspects (as distinct from preliminary or collateral extra-oral phases), must be practised *in the mouth* of the patient. In this respect it is unlike health service relating to the eye by physicians (specialists in ophthalmology, oculists), whose work may usually be supplemented, in the direct and concluding phases of treatment, by optometrists as specialists in refraction, and by opticians. The *terminal* practice of health service applied to the teeth, chiefly because of its surgical nature and responsibilities, could not, unlike opthalmology, properly be divided among physicians and technicians.

ii. The dental practitioner, in the *terminal* aspects of his service, must comprehend the import of the variable biological conditions involved, and also must possess the knowledge and skill to perform the requisite intra-oral operations. According to an erroneous popular belief, all dental troubles come to an end when all the natural teeth are lost and prosthetic dentures take their place. Reliance on this fallacy is encouraged by many physicians who seem to know nothing of the *physiological* changes in the jaws that follow extractions, or of the injuries to the denture-supporting tissues, and to the health of the patient, that are directly or indirectly brought about by ill-fitting appliances.

jj. The technician, in the laboratory, may prepare an appliance from a dentist's models and specifications and, following a dentist's instruction, may in the laboratory adaptively modify it. By attending to various *extra-oral* procedures, a coöperating technician can very effectually increase the amount of time available to a dentist for advisory and intra-oral service to his patients.

21. Without the education in the basic sciences and in their clinical application that the practice of dentistry requires, the most competent dental technician (who with such additional training would be a dentist, not a technician) could not be entrusted with the responsibility of giving surgical or therapeutic treatment, or of adapting appliances to oral

conditions. He could not do so, in any province or state in Canada or the United States, without violating the law that there regulates the practice of dentistry—a fact that is important as showing the nature of *prevailing* professional opinion based on *experience*, in all parts of both countries.

kk. The dental hygienist is trained to clean teeth, to note and record the nature of dental defects and oral conditions, and to instruct patients and the public regarding conditions for the promotion and conservation of oral health, and, through it, of general health. As a licensed assistant to a dentist for these purposes, the function of the dental hygienist is analogous to that of the professional nurse. A dental hygienist may not legally perform any *intra-oral* operations excepting to cleanse the patient's teeth and mouth—and this may be done by the hygienist only as the accredited assistant of a dentist and under his responsible supervision.

22. These statutory restrictions on the service of the dental hygienist have remained unchanged since the adoption of the first legal enactments affecting dental hygienists, in 1907. There appears to be neither public need nor professional desire to give dental hygienists increased responsibilities in intra-oral dental practice, although their preliminary education is above the grade of that projected for the technicians in the recently revived advocacy of the "master-servant plan," and their special training is much more extended than that contemplated for the uneducated assistants on that plan.

T. Some dentists and many physicians belittle dentistry because its practice requires close attention to details. Such disparagement reflects the ignorance and complacence of those who, guilty of it, disregard the interests of the patient. The character of the technique of dental practice is determined chiefly by the nature, environment, and functions of the teeth. Astronomers use telescopes; histologists use microscopes. The sizes of the objects examined or of the instruments used do not make the one group of observers great and the other trivial. Pasteur's achievements with the microscope are quite as respectable as those of any astronomer. In the final analysis in dental practice, *mechanical precision* represents *therapeutic exactness*. Fortunately for the patient, mechanical precision attains this high degree of importance in the service given by the modern, trained, conscientious dentist. The uneducated technician would know little and care less about the therapeutic effects of his work. He would doubtless be "the first person to sell dentistry 'short.'"

ll. The recent revival of the suggestion that the mechanical work of *intra-oral* dental practice be done by uneducated technicians, on the assumption that such persons could be "directed" in the execution of the intra-oral operations, appears to be based on a very low opinion of dental technology. All this is reminiscent of the centuries during the Middle Ages when physicians disdainfully regarded surgery as "mere hand-work," and looked upon surgeons as artisans and therefore as inferiors—and when physicians, disregarding the interests of the patient, harassed the development of surgery, and the advancement of surgeons, by devices best known to the times.

mm. Dentistry is a profession; its practice is an art. Perhaps those who suggest that uneducated technicians could do the mechanical work of intra-oral dental practice under the "direction" of physicians are also ready to intimate that the great musicians, painters, sculptors, and other artists of the future will be not those who *do* any actual hand-work in these fine arts, but rather those who *direct* uneducated technicians to "follow instructions."

23. In an essay on "the significance of technique," Havelock Ellis made this very pertinent statement: "One sometimes hears ignorant persons speak of technique with a certain supercilious contempt, as though it were a mere negligible and inferior element in an artist's equipment and not the art itself." (*Grace R. Spalding, D.D.S., F.A.A.P.: New York Journal of Dentistry, 1931 i, p. 300; July.*) There is plenty of ignorance and superciliousness in some contemporary evaluations of dental technique.

U. Owing to the need for exceptional digital facility in the manifold intra-oral procedures of dental practice, and for esthetic felicity in their execution, neither the meticulous technical training, nor the extensive clinical instruction and accompanying clinical practice peculiar to dental education, could be added to a conventional medical curriculum, leading to the M.D. degree, without making the period of dental training prohibitive in length for most of the prospective general dental practitioners. The period required for the education of the general *medical* practitioner has already, in the opinion of many, attained excessive length.

nn. The medical curriculum is altogether too rigid, and the views of state boards of medical examiners and of medical faculties too inflexible, to permit substitution of careful training in the essential mechanical and

esthetic aspects of dentistry for anything now required in the conventional education of those who receive the M.D. degree.

24. Such a modification of medical education—which seems impossible—would be the only practical foundation for the training of dentists in medical schools and the award to them of the M.D. degree.

25. The existing medical schools, which are overcrowded, do not admit more than about 60 percent of the total number of applicants.

(h) If the dental schools were discontinued, and dentistry taught only to medical students, the current need for new dental practitioners could not be met unless the medical schools were greatly increased in number, or in capacity and facilities, and their work generally reorganized. [H, p]

26. The undergraduate medical curriculum does not provide for the training of specialists of medical practice. What, therefore, could be the reason or inducement in medical schools to give dentistry exceptional attention in *undergraduate* medical education?

oo. There is nothing of *consequence for general dental practice* in a *curriculum* for the M.D. degree that cannot be included in the dental curriculum, or which cannot soon be learned by the young dental graduate as he teaches himself and grows in capacity from experience.

27. Anything that might properly be *taught* to a candidate for the M.D. degree, or for any other degree, but which has been omitted from his *formal instruction*, may be learned by him otherwise after his graduation. Very much that may be *taught* in a medical school to a prospective physician can be learned by a dentist outside of medical schools. These two assertions are statements of the obvious, although the significance of these facts in professional education is usually ignored or overlooked by those who magnify the importance of *excesses* and *irrelevancies* in "courses."

(i) The practitioner of any type of health service usually learns, *after* graduation from a professional school, very much that he did not know *before* graduation. Many teachers seem to assume, however, that a practitioner cannot be expected to learn anything after he graduates, and that therefore he must be told "everything" before he receives the diploma.

(10) *Successful* practitioners generally admit that they soon forgot the details they were taught in the courses "passed" in the professional school, and that they practise chiefly what they learned afterward—which was much more than they learned before. This is true of successful graduates of all types of schools. Does not growth in experience imply the development of this condition?

pp. Prospective practitioners who are able and willing to combine the responsibilities and procedures of both medical practice and dental practice

have always been entirely free to acquire the M.D. degree, and also the D.D.S. (D.M.D.) degree, and to pass license examinations for admission to both kinds of statutory practice. The prolonged general failure to obtain the training required for both kinds of service reflects the existence of important *practical* reasons against this procedure. [J, 11, (8)]

28. Not many years ago it was a comparatively easy matter, after receiving the D.D.S. (D.M.D.) degree, to obtain one or more medical degrees (e.g., C.M., M.D.) from a recognized medical school in the succeeding year, or even in the following week. Some dentists who *in this way* obtained one or more medical degrees, appreciating the significance of subsequent developments in professional education, have refrained from using these degrees thus awarded to them, and from pretending to be "medical men;" but some dentists who obtained medical degrees *in this way* are among the most complacent in their assumptions that a superiority, over their dental colleagues, has been *created* by the M.D. label.

(j) Attention has recently been directed to realities in this situation by this comment expressive of well-known conditions: "When I was in my senior year in dental school, in 1896, I received a bonafide offer of a course in a recognized medical school, to run concurrently with my dental course, through the one year of seven months, which would give me the degree of doctor of medicine one week later than [when] I was to receive my degree of doctor of dental surgery. The medical registration laws of Indiana at that date would have permitted me to register legally for the practice of medicine and nothing short of a felony or insanity could have taken that right from me. I was almost foolish enough to accept it, but I did not have the $100 necessary and was, therefore, saved from perpetrating that crime upon society. Three of my classmates accepted and are today legally registered to practise medicine in Indiana. They have all had the good taste not to do so." (*F. R. Henshaw, Dean, Dental School, Indiana University; Journal of the American Dental Association*, 1932, xix, p. 1609; Sept.)

(11) Some of the beneficiaries of these sincere conditions, and of these lofty requirements, in medical education [i], repeatedly declare that the standards of dental education have been lowered because a dental student can no longer automatically use his dental credits at, say, the end of the second year, to gain admission to the third year in a medical school. That the various types of professional education are desirably divergent and therefore non-equivalent in character, does not disturb those who use this dissimilarity between dental education and medical education in a one-way argument to disparage dental education. This disability of dental students, so far as admission to advanced standing in medical schools is concerned, applies also to students of engineering, law, theology, etc. On the other hand, medical students cannot, in universities, automatically transfer their credits to dental schools as full equivalents for the D.D.S. (D.M.D.) degree, or for degrees in engineering, law, theology, etc. The functions of these professions being different, their systems of education are necessarily dissimilar, and their "course credits" are obviously unlike. Such a distinguished scientific man as Einstein, regardless of his eminence in the field of relativity, would not

be admissible to advanced standing in, say, the third year of any North American dental school.

(12) Gifts of medical degrees in the United States are now available only at the surviving proprietary medical schools. [J, 11, (c), (7–8)]

qq. If, when, where, and as urgent public need arises for physicians able to engage in medical practice and also in dental practice, the emergency would probably be met by individual initiative aided by medical and dental curricula well coördinated for this purpose. [J, 11, (8)]

29. Such practitioners would be analogous to the few physicians who, besides obtaining the M.D. degree, have also *earned* the Ph.D. degree. There is no more reason for requiring the M.D. degree for admission to the study of dentistry than there is for requiring the Ph.D. degree for admission to the medical school.

IX. UNDERGRADUATE MEDICAL EDUCATION MIGHT THEORETICALLY BE SO REORGANIZED THAT IT COULD BE MADE IDENTICAL IN PART FOR ALL HEALTH-SERVICE PRACTITIONERS, AND THAT, FOR EACH TYPE, IT WOULD BRANCH EARLY FROM A COMMON BASE IN THE SO-CALLED MEDICAL SCIENCES; AND DENTISTRY MIGHT THEN BE INCLUDED IN SUCH A NEW SYSTEM OF DIVERGENT "MEDICAL" EDUCATION

If this revolution were brought about—there are no signs of its coming—the need for separate organization of dental practitioners would continue, and probably various existing specialties of medical practice would then also become separately organized

V. Medical education *might* be so reorganized that the minimum general scientific ("basic") preparation essential for each of the chief types of health service could be given *uniformly* to all prospective practitioners. This has been urged by many as logical and theoretically desirable.

rr. This uniform "basic" minimum preparation *might* be followed, in medical education, by the kind of direct training for each main functional group—dentists, internists, nurses, ophthalmologists, etc.—that would be required by the special service of the group. Corresponding professional degrees (or the Ph.D. degree, instead, as proposed by a few) *might* then be awarded to the practitioners.

30. Dentistry *might* preferably be grounded in this new system of *divergent* "medical" education—a system of inclusive *health-service* edu-

cation. *There are, however, no important indications of the beginning of a revolution of this kind in medical education.*

31. *If* this revolution should occur, however, the practitioners in each division of service—dentists, laryngologists, obstetricians, public-health administrators, etc.—would then be so dissimilar in their special training, in their particular duties, and in their direct objectives, that separate organization of each type of professional education and of each corresponding group of practitioners would be necessary to maintain the highest efficiency of all.

ss. Under these conditions, *if* they were brought about, *dentistry, even though then accredited as a specialty of medical practice, would continue to be a separately organized natural division of health service* ("*medicine*").

32. Other divisions of present-day medical practice would then also presumably attain a status of separate organization.

(k) The current multiplication and growth of national associations of specialists of medical practice, the creation of the American College of Physicians and the American College of Surgeons, and the importance of such bodies as the American Board of Obstetrics and Gynecology, the American Board for Ophthalmic Examinations, the American Board of Otolaryngology, etc., show the strength and significance of the natural trend toward separate organization and intensive promotion of all natural divisions of health service ("medicine").

tt. After such a revolution in medical education, *if* it should come, the national societies representing the practitioners of the various natural divisions—all aiming to conserve or restore health in restricted fields—could be most effectually *united in spirit and general purpose* in an inclusive "*American Federation for Health Service*" rather than in an exclusive American Medical Association. (The public desirability, *now*, of such an inclusive federation is obvious.)

33. Because of the prospective importance and dissimilarities of the functions of each group of practitioners, after the *hypothetical* revolution, there would also be continued public need for such national organizations of practitioners as the American Medical Association, the American Dental Association, etc.

W. The inevitable division of labor in science and in oral health-service—a progressive division that is steadily becoming more complicated—is illustrated by many organizations such as the [American] Association for the Study of Internal Secretions. This national organization holds important meetings and publishes a journal—*Endo-*

crinology—to promote intensive and sustained attention to an important phase of physiology.

uu. Divisions of science and art, once formed and accredited, tend to keep on growing and enlarging. They are rarely reabsorbed into the body from which they arise.

34. Dentistry, by rooting its health service in basic sciences, by aiming to correlate the instruction in these sciences with the real needs of the *beginner* in dental practice, and by avoiding doctrinaire irrelevancies, has set an example of very effective adaptation of means to ends.

35. It is more likely that various natural divisions of medical practice will become independently established—an eventuality that does not seem to be remote—than that the separate organization of dentistry will be discontinued.

X. WHILE DENTISTRY IS BEING EVOLVED INTO THE FULL HEALTH-SERVICE EQUIVALENT OF AN ORAL SPECIALTY OF MEDICAL PRACTICE, UNDER EXISTING DENTAL LEADERSHIP, EFFORTS OUTSIDE OF THE DENTAL PROFESSION TO CONTROL DENTISTRY'S FUTURE RELATIONSHIPS SHOULD BE SUSPENDED

Organized dentistry desires and deserves unrestricted opportunity to achieve its greatest public usefulness. Organized medicine does not desire and does not show any inclination to try—despite the promptings of would-be "stomatologists"—to force dentistry into a status that would be unwelcome to dentists

X. When dentistry, sustaining its separate organization and its adapted system of education and practice, becomes the full health-service *equivalent* of an oral specialty of medical practice, the laity will have no material interest in the technical question whether dentistry should then be formally converted into a specialty of medical practice. The results in health service for the patient would be the same under both conditions.

vv. In that day, the medical and dental practitioners directly concerned will easily agree either that the organization of physicians and dentists into two autonomous professions has been so satisfactory that it should be continued, or so undesirable that union should be effected. The ensuing decision will then be natural and useful.

36. Meanwhile, in North America, dentistry cannot profit from any new relationship, which, by forced requirements or artificial character, would increase the difficulties of dental practice without assuring higher quality in the practitioner and greater excellence in his service; or which would increase the economic load for either the public or the profession, or both.

37. Meanwhile also, since organized medicine will continue to be confronted by many urgent problems requiring close attention, few physicians would wish to experience the needless embarrassments and demoralizations resulting from an attempt to disrupt organized dentistry and forcibly to include all or a portion of dental practice in medical practice.

Y. Dentistry, a separately organized profession in the United States since 1839–40, has merited and won a permanent place in public service and in public respect. It continues to require opportunity, encouragement, and coöperation to maintain its normal growth, and to meet all its increasing obligations and opportunities, as a natural division of health service. Existing dental leadership is steadily promoting this desirable development.

ww. The dean of a leading dental school, who is aware that he has been appropriately superseded in dental councils by younger and more representative dentists, has lately been trying to persuade the deans of some medical schools to decide what *they* will "do *with* dentistry." Very few of these medical deans have been sufficiently complacent to believe that this would be a proper sphere of activity for them. They seem to have decided, apparently from their understanding of the limitations of medical practice and also with their minds on the Golden Rule, that better dentistry by dentists, with sincere coöperation from physicians to that important end in the public interest, will be far better for all concerned in this particular relation than a campaign in medical politics intended to disorganize dentistry.

xx. At a recent meeting of a state dental society, the dean of a medical school, who had been widely quoted as favoring the "master-servant plan" for *dentistry* (not for medical practice), said very modestly, in an extemporaneous address, that *medical* education is now being conducted so poorly that deans of medical schools are not competent to tell deans of dental schools how to conduct *dental* education.

Z. The menace of "state medicine" in North America should be met constructively by "organized medicine" and "organized den-

tistry" *in intimate and helpful coöperation.* Organized medicine will wisely seek the active assistance of organized dentistry in providing the information and guidance the American public needs for the best solution of current community problems relating to the "costs of medical care."

yy. The succeeding Supplement presents some notes on "state medicine" and related subjects, with special reference to a type and degree of initiative and coöperation among the practitioners of health service that would seem to be very desirable for the public as well as for all the professions concerned.

(A summary of general conclusions from the foregoing notes is given in Section II, page 947.)

XI. SUPPLEMENT:[4] A PROPOSED SUBSTITUTE FOR "STATE MEDICINE"

This substitute would affect dentistry as one of the separately organized coöperating health-service professions concerned

A. Current discussions regarding the "costs of medical care" (which include "dental care"), and associated suggestions of state management of health service as a means of reducing these costs, reveal a growing danger that progress in the improvement of all phases of health service may be seriously interrupted by the public adoption of unwise economic measures without regard for effects on the quality of the medical care to be provided.

B. Complaints against the costs of medical care, which often ignore important considerations of fairness to the private practitioner, gain their growing force from the economic distress of those who, living on small incomes while working contentedly in humble relationships, lean toward the view that the public they willingly serve under such conditions should provide agencies for health-service *at charges within their means.* Disregard by the medical and dental professions for the health-service needs of this large group of citizens would violate the humanitarian ideals, shirk the responsibilities, and impair the

[4] The views in this Supplement have been expressed in various addresses—in the most detailed form two years ago; Gies: *Bulletin of the Medical College of Virginia*, 1930, xxvii (whole number); Nov.

functions of these *health-service* professions, and would also encourage measures of desperation to obtain the public relief that "state medicine" seems to offer.

C. "State medicine" would lose its appeal, as a practical solution of present economic difficulties, if the organized health-service professions, *in effective coöperation*, should meet the situation in harmony with their humanitarian purposes and in due recognition of existing economic inequalities. This they can do by systematically organizing and maintaining institutions (or groups) to provide excellent preventive and clinical health-service at moderate fees specifically for patients having low income. Such institutions (or groups) should be established under professional auspices, *only if, where, when, and as community needs would determine.* Public-spirited laymen would certainly coöperate in founding and maintaining these health-service agencies.

a. This general plan would put the problem *directly into the hands of the organized health-service professions*, which are the most competent authorities to devise ways and means for its solution. The plan would not encourage universities, or any other organized lay groups, to create "clinics" or units for health service independently of, superciliously above, or in indifferent detriment to, the professions affected.

b. The plan would assure high consideration for *selected deserving patients* having low income; economic justice for the private practitioner; maintenance of the private practitioner's initiative, individuality, and personal relationships with his patients; and unimpaired continuance of the progress of health service in its present educational and scientific evolution.

1. There would be complete accommodation of the interests of public and practitioners, without indifference or injustice to either.

2. *There would be a wide increase in the benefits of health service among the many who, for economic reasons, now fail to obtain such service.*

3. There would certainly be no diminution in the number of persons who would continue to prefer, and who would actually pay adequate fees for, the services of private practitioners.

c. If this general plan were put into operation, great difficulties would disappear and only minor ones would arise.

4. The prospective institutions (or groups), given any appropriate names—"agencies," let us call them here—would be envisaged by all ethical practitioners as directly representing the professions concerned.

(a) Philanthropic and community resources, health-insurance funds, industrial allowances, club gifts, legislative grants, and other financial support, would be obtained for the establishment and maintenance of these agencies.

(b) The organization of these spècial health-service agencies would be expertly guided, and their functions controlled, by the professions most competent to do so.

(c) These agencies would represent constructive efforts to supply excellent service under professional auspices *that would not compete undesirably with private practitioners.*

(d) Effectual geographic distribution of these agencies as health centers in rural communities, *under the auspices of state and county professional organizations*, would remove most of the special difficulties attending adequate "medical care" in sparsely populated districts.

(e) The work of these agencies would be conducted by practitioners selected by their colleagues for their tested adaptability to practice under such conditions.

(1) These selected colleagues would consciously serve not only the best interests of the public, but also those of the health-service professions they represented, and their functions would be thus accredited and esteemed.

d. The chief obstacle in the way of this plan is the need for special funds sufficient in each such health-service agency, large or small, to enable it to provide *all* required facilities, including records and research, to pay *proper* salaries, and to render *excellent* professional service, at fees that collectively should not be intended to equal the total expense.

5. In this respect these agencies would be like the university schools of medicine and dentistry, which, for example, do not charge tuition fees that collectively equal the cost of the instruction given, but depend upon income from other sources to sustain this liberality.

6. It is reasonable to believe, in the light of current events, that funds in adequate amounts would become available wherever the beneficence of the plan, *under professional leadership*, would appeal to the public.

e. Measured in values for the public, such a voluntary procedure under contented professional auspices would be superior to any plan, with similar intent, that might be enforced in disregard for professional interests and judgment.

D. The main feature of this plan is the *professional organization and control* of the proposed health-service agencies.

f. The persons who are trained in universities and licensed by the states to be community experts and leaders in medicine, dentistry, and the other health-service professions, are obviously the most competent collectively to establish and to determine the service of such agencies in the public interest.

7. Lay *coöperation* with, rather than lay *control* of, such agencies, and complete freedom from political relationships excepting such as would bring disinterested support, would be essential.

(f) In matters of organization affecting financial, legal, civic, and other conditions, lay assistance instead of lay dominance in the "boards of directors" would meet the requirements for perfect conduct of such agencies in all relationships outside of the health-service field.

E. The organized health-service professions are founded on humanitarian principles. They should awaken to the need and opportunity to *plan* and to *endeavor* to prevent disease in the supposedly well, and to cure or relieve sickness, *on an increasingly comprehensive scale* and in a way continually to *benefit all within the means of each*—with cumulative public financial support under professional leadership.

g. The health-service professions, which have made some of the most important contributions to the refinements of civilization, which have lengthened life expectancy and enhanced life's satisfactions—which have served humanity with extraordinary fidelity and success—may be reasonably expected to rise steadily higher in their beneficence.

(A summary of conclusions, relating to the notes preceding this Supplement, is given in Section II, page 947.)

SUPPLEMENT

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I. New York Academy of Dentistry

NOTES FROM THE MINUTES OF THE PROCEEDINGS IN 1931–32

Lowrie J. Porter, D.D.S., Secretary

OFFICERS AND COMMITTEES

President, L. M. Waugh. *Vice-president*, J. D. Eby. *Secretary*, L. J. Porter. *Treasurer*, A. L. Kohn. *Editor*, M. W. Carr. *Executive Committee:* A. S. Walker, K. C. Pruden, G. S. Callaway, *Chairman*. *Fellowship Committee:* H. W. Gillett, S. E. Davenport, Jr., H. S. Vaughan, *Chairman*. *Non-Resident Fellowship Committee:* S. E. Davenport, Sr., H. S. Vaughan, W. B. Dunning, *Chairman*. *Dental Social Welfare Committee:* F. W. McDonald, J. K. Hoornbeek, T. E. Dwyer, *Chairman*. *Journal Committee:* S. E. Davenport, Jr., M. W. Carr, W. B. Dunning, *Chairman*. *Activities Bureau:* E. J. Nestler, Eugene Senior, G. S. Callaway, E. G. Van Valey, *Chairman*. *Advisory Committee of the Activities Bureau:* C. F. Bödecker, W. J. Gies, A. H. Merritt, L. M. Waugh, B. B. Palmer, *Chairman*. *Photographic History Committee:* Matthew Carney. *Committee on Education of the Public:* Matthew Carney. *Lantern Committee:* Roland Morse, W. J. Murray. *Dinner Committee:* W. C. Keller. *Publicity Committee:* G. M. Babbitt, F. W. Pratt, Matthew Carney, *Chairman*. *Publicity Committee to Study the Plans of the American Dental Association:* A. L. Kohn, S. E. Davenport, Jr., Leland Barrett, *Chairman*. *Reception Committee:* G. S. Callaway, E. J. Nestler, Eugene Senior, E. G. Van Valey, *Chairman*.

SCIENTIFIC MEETINGS (1931–32)

Seven regular meetings and one special meeting were held at the Yale Club, New York City. All were preceded by informal dinners.

October. Dr. H. E. Phillips, Chicago, Ill., read a paper on "Some phases of health insurance trends in their relation to the dental profession." Dr. M. M. Davis, Director of Medical Service, Rosenwald Fund, Chicago, Ill., and Dr. L. R. Williams, Director of the New York Academy of Medicine, New York City, opened the discussion.[1]

November. Dr. R. C. Willett, Peoria, Ill., read a paper on: "Oral defects common in childhood and practical methods for their treatment." Discussion was opened by Dr. T. P. Hyatt, New York City.

December: a joint meeting of the New York Academy of Dentistry and the New York Section of the International Association for Dental Research. The following subjects were presented:[2] I. Reports by the Research Council— (a) "A study of the influence of soap when taken into the mouth" (preliminary), by the Chairman, Dr. W. J. Gies; introductory to (b) "A review of the scientific literature on the 'physiological' properties of soaps," by Victor Ross, M.A., Ph.D., Bureau of Laboratories, New York City Department of Health. II. "The use of the dental-caries index by the general practitioner," by C. F. Bödecker, D.D.S., F.A.C.D., Columbia University, New York City. III. "Some new developments in microcinematography as applied in living-cell research," by Heinz Rosenberger, Rockefeller Institute, New York. IV. "A note on the study of dental caries in the rat," by Theodor Rosebury, D.D.S., Columbia University, New York City. V. "Histological study of roentgenographically negative buried roots" by J. L. Zemsky, D.D.S., Columbia University, New York City.

January. A. H. Merritt, D.D.S., F.A.C.D., New York City, read a paper on "Vincent's infection: etiology, diagnosis, and treatment." There was a general discussion.

February. C. J. Imperatori, M.D., Columbia University, read a paper on "Foreign bodies of dental origin in the respiratory and digestive tracts: their diagnosis and treatment." General discussion

[1] Phillips: *Journal of Dental Research*, 1932, xii, p. 41; Feb.

[2] Proceedings of the International Association for Dental Research: *Ibid.*, p. 251; April.

followed from the fields of oral surgery, anesthesia, prosthodontia, orthodontia, and general practice.

March. The annual series of progressive table clinics was presented as follows: (a) "Cements and indications for their uses"—Dr. F. J. Bronner. (b) "Non-cohesive gold foil in pit-and-fissure cavities"—Dr. W. B. Dunning. (c) "Simple technic for use of cohesive gold foil"—Dr. L. L. Hartman. (d) "Porcelain jacket preparation and the mounting of the model"—Dr. W. J. Meier. (e) "Inlay restoration technic"—Dr. C. J. Robertson. (f) "Porcelain inlays for approximal fillings of anterior teeth where impossible to take impressions," and (g) "Hiding gold in large restorations of bicuspids"—Dr. W. A. Spring.

April (annual meeting). Reports of officers and committees were presented. The following officers were re-elected for the coming year: *President*, L. M. Waugh. *Vice-president*, J. D. Eby. *Secretary*, L. J. Porter. *Treasurer*, A. L. Kohn. *Editor*, M. W. Carr.

The following seven associate fellows were elevated to active fellowship in the Academy, in recognition of achievements and distinction in the profession: Drs. W. C. Chapin, F. C. Cole, T. E. Dwyer, R. N. Morrow, W. J. Murray, F. G. Neurohr, W. E. Taylor.

Sir Wilfred Grenfell, K.C., M.G., M.D., Founder of the International Grenfell Association, Labrador, addressed the Academy on "The Challenge of the Labrador." Sir Wilfred spoke on the dental needs of the natives.

May (special). A special meeting was held on May 26, 1932, to consider a report of the committee appointed to investigate the "educational-publicity activities of the American Dental Association." The following resolutions were adopted:

"*Whereas*, the attention of the New York Academy of Dentistry has been directed to the system of dental advertising, sometimes referred to as 'the Little Rock idea,' approved by the Board of Trustees of the American Dental Association; and

"*Whereas*, this advertising copy, because it implies an attempt by organized dentistry to create markets for its services, can be logically judged to be advertising rather than educational material; and

"*Whereas*, the use of such copy is in direct violation of the spirit of the code of ethics of the American Dental Association; and

"*Whereas*, the use of such copy will lead to criticism of the profession by

laymen and allied professional groups, and cause a loss of dignity, prestige, and confidence, and cause the public to interpret all the altruistic activities of the profession as being tainted with commercialism; be it

"*Resolved*, that while the New York Academy of Dentistry appreciates the desirability and importance of public education regarding mouth health, we believe this can best be done by a lay philanthropic organization, and that the American Dental Association should act only in an advisory capacity; and be it further

"*Resolved*, that the New York Academy of Dentistry express its condemnation of the dissemination of such advertisements, by any body of organized dentists, or other individuals; and be it further

"*Resolved*, that the Academy urge the Board of Trustees of the American Dental Association to instruct the Dental Educational Publicity Committee to avoid promoting any scheme of paid dental advertising, and to make it plain to the committee that its duties are solely those of a censoring body; and that, in fulfilling those duties, it so restrict its approval on educational-publicity copy that all features which may bring discredit upon the dental profession, or charges of unethical practice against the profession, or its organizations, will be eliminated; and be it further

"*Resolved*, that copies of these resolutions be sent to the Chairman and Secretary of the Dental Educational Publicity Committee, officers and trustees of the American Dental Association, President and Secretary of each state dental society, presidents and secretaries of all state boards of dental examiners, deans of all dental schools in the United States, officers of the American College of Dentists, and the Secretary of the American Association of Dental Editors."

COMMENT ON THE WORK OF THE RESEARCH COUNCIL

During the year Dr. Victor Ross of the New York Department of Health, working under the auspices of the research Council, completed a thorough review of the scientific literature on the action of soap in the mouth and in the body in general. The substance of the review was presented at a joint meeting of the Academy and the New York Section of the International Association for Dental Research, on December 10, 1931. A brief abstract of Dr. Ross' report was published in the April issue of the *Journal of Dental Research*, p. 251. The complete report will be published in a subsequent issue of the *Journal*. The Council has voted its conviction that an experimental study of the action of soap in the mouth is indicated by the outcome of Dr. Ross'

summary of the literature on the subject. Estimates of the probable cost of such a study are now being obtained, for consideration by the Council at an early date.

The Council coöperated privately, by invitation, with the Council on Dental Therapeutics of the American Dental Association in the study of the validity of statements regarding a well-known dentifrice and an antiseptic solution. The work in this relation was done by Drs. Bödecker, Karshan, and Rosebury of the Dental and Medical Schools of Columbia University. The results have been forwarded to the Council on Dental Therapeutics for their use.

Dr. Palmer, pursuant to vote by the Research Council, conducted an inquiry on the validity of advertising claims in behalf of another well-known dentifrice. His report was referred to the Council on Therapeutics of the American Dental Association for their information, and also for any correspondence that might be desirable, before the Research Council takes further action on the subject.

IN MEMORIAM

The following memorials and resolutions were adopted by the Academy.

J. Lowe Young

"By the death of Dr. J. Lowe Young, on May 3, 1931, the New York Academy of Dentistry suffered an irreparable loss. To all who knew him, Dr. Young's name stood for clarity of thought, sound judgment, and absolute integrity. With these qualities was associated a rare courage in the expression of his opinions and decisions, whenever courage was required. His capacity for clear thinking and his ability to express his conclusions in cogent language, intelligible both to patients and confreres, resulted in his obtaining the confidence and loyalty of both to an exceptional degree.

"While of an exacting nature, due to his high standards not only in regard to his professional work but in the art of living, he was a man keenly sensitive to the trials and sorrows of others and ever ready by word and deed to help and comfort where opportunity offered. His genuine affection for his friends, and his love and devotion in the family, marked him as a man of deep feeling in matters that touched the heart. His high ideals, always consistently and steadfastly adhered to, the fairness of his estimate of others, his loyalty in support of right, his consistent and courageous opposition to

all that he deemed wrong or unfair, and his capacity for loyal friendship, were outstanding characteristics that endeared him to the Fellows of the Academy.

"Dr. Young was born in Ontario, Canada, February 10, 1868. He obtained his early education in the schools of that province, and his professional degree at the Philadelphia Dental College in 1890. Before coming to New York to practise as an orthodontist, he carried on general practice in Montana for three years and in Detroit for eleven years.

"The New York Academy of Dentistry hereby records its deep sorrow and its sense of great loss in the death of its valued Fellow, Dr. J. Lowe Young.

"The Academy tenders to Mrs. Young and the members of her family the deepest sympathy of its Fellows, for the sorrow that has come upon them in the loss of a loving husband and father."

Theodore Victor Smith

"Having learned of the sudden death of our non-resident Fellow, Dr. Theodore Victor Smith, which occurred on the 19th of August 1931, the New York Academy of Dentistry recognizes that it has lost a valued member whose eminent position in dentistry has made him an honor to our Academy.

"Dr. Smith was born in Westfield, New Jersey, in 1879. After his early education in New Jersey, he studied at the New York College of Dentistry for one year, and then at the Dental School of the University of Pennsylvania, from which he was graduated in 1899. He was a demonstrator in that school from 1901 until 1903, when he went to England to become associated with Dr. Kirk Davenport, and succeeded to the practice after Dr. Davenport's death in 1915.

"In deference to his royal patients, he became a naturalized British subject in 1922, and the following year was appointed dental surgeon to H. R. H. The Prince of Wales. Dr. Smith was a member of the British Dental Association, the Royal Society of Medicine, the American Dental Society of London, and the American Dental Society of Europe. He was president of the latter society in 1931. In 1901 Dr. Smith married Emma May Johnson who survives him.

"*Whereas*, it has pleased Almighty God to remove by death our esteemed professional brother, Dr. Theodore Victor Smith, be it therefore

"*Resolved*, that we, the Fellows of the New York Academy of Dentistry, deeply sense the loss of this valued member, whose conscientious service to humanity and the profession has been so conspicuous; and be it further

"*Resolved*, that we tender our heartfelt sympathy to the bereaved family, and that a copy of these resolutions be spread upon the minutes of the New York Academy of Dentistry."

II. International Association for Dental Research

Memorandum on the proceedings in 1931–32[3]

William J. Gies, F.A.C.D., Secretary

The *tenth general meeting* of the International Association for Dental Research, in Columbus, Ohio, at the Deshler-Wallick Hotel, March 19 and 20, was coördinated there by agreement with the annual meeting of the American Association of Dental Schools, March 21–23, inclusive. The members of each Association participated so freely and contentedly, in all aspects of the sessions of both, that the two became in effect a five-day meeting devoted intensively to the promotion of research, teaching, and educational administration in dentistry. There was universal gratification with the results of this further effort to coördinate the meetings of the two associations for these constructive purposes. The chairmen at the sessions of the Research Association were the President, A. E. Webster, University of Toronto, and the Vice-president, E. H. Hatton, Northwestern University. The attendance, at each of the three daily sessions devoted to research, was large and attentive; the number of young men among those who presented reports was greater than ever; the quality of the work described was never higher. The annual informal dinner, preceding the last of the six sessions, was attended by 114 members and guests. The dinner was followed by the President's annual address (this volume, pp. 412–14), the reading of four papers, and the concluding

[3] A brief outline of the organization and early development of the International Association for Dental Research, including the Constitution, was published on pages 197–208 of Volume VIII (1928) of the *Journal of Dental Research*. This was followed, in the same issue, by a summary of the proceedings of the first five general meetings, and a register of membership as of March 15, 1928 (pp. 209–233). Records of the proceedings of subsequent general meetings were published in the *Journal of Dental Research* as follows: *Sixth* (1928, viii)—abstracts, p. 395; executive data, p. 696. *Seventh* (1929, ix)—abstracts, p. 269; executive data, p. 756. *Eighth* (1930, x)—abstracts, p. 367; executive data, p. 782. *Ninth* (1931, xi)—abstracts, p. 437; executive data, p. 908. *Tenth* (1932, xii)—abstracts, p. 411.

executive proceedings. The coöperation of the Vienna Section, which contributed 20 papers, was again a feature of the meeting. The June issue of this *Journal* consisted exclusively of the scientific proceedings of this meeting (111 presentations). Reprints of these pages (158) were sent to all the members, to the deans of the dental and medical schools in North America, to numerous workers in related fields, and to others also presumably interested in the progress of dental science. The colleagues listed on pages 565–568 of this volume were elected to membership. A register of the officers and members, as of November 15, 1932, is given below, where it may be seen that there are now 280 members and 20 sections in 5 nations.

The location of the *sections* is indicated below in the register of members in the sectional groups. Since the Columbus meeting, sections have been organized in Columbus, Louisville, and Prague. During 1931–32 meetings of the sections were held on this schedule: *Ann Arbor:* Nov. 2. *Boston:* Dec. 21, Feb. 11, May 23. *Chicago:* Oct. 9, Jan. 17, Mar. 11, May 20. *Cleveland:* Dec. 14. *Columbus:* Apr. 29. *Halifax:* Oct. 2, Nov. 27, Jan. 29. *London:* Jan. 20, Mar. 9. *Louisville:* Apr. 19. *Minnesota:* Nov. 30, Jan. 25, Feb. 29, Mar. 28, Apr. 25. *New Haven:* Dec. 7, Feb. 17. *New York:* Dec. 10, May 10. *Philadelphia:* Nov. 24, Mar. 4, Apr. 15, June 3. *Pittsburgh:* Oct. 5, Nov. 2, Dec. 7, Jan. 4, Feb. 1, Mar. 7, Apr. 4, Apr. 25, June 23. *Prague:* May 3. *St. Louis:* Oct. 13, Jan. 12, Apr. 12. *San Francisco:* Mar. 9. *Toronto:* Nov. 12, Mar. 8, Apr. 19, May 25. *Washington:* Oct. 13, Mar. 5. Proceedings of sectional meetings have been published on pages 117, 251, 569, 591, 709, and 759 of this volume.

The *next* (*eleventh*) *general meeting* will be held in Chicago, Ill., March 18 and 19, 1933, preceding and in coördination with the tenth annual meeting of the American Association of Dental Schools, March 20–22, inclusive.

REGISTER OF MEMBERS AND OFFICERS: NOVEMBER 15, 1932

MEMBERS: 1. *Ann Arbor Section.*—R. K. Brown, R. W. Bunting, Faith P. Hadley, Philip Jay, C. J. Lyons, **U. G. Rickert*, E. O. Scott, F. B. Vedder, M. L. Ward—9

* Secretary of the Section.

2. *Boston Section.*—L. W. Baker, * *F. R. Blumenthal,* P. E. Boyle, W. G. Bridge, F. P. Chillingworth, F. H. Daley, C. E. Hatch, E. A. Hooton, P. R. Howe, V. H. Kazanjian, P. A. Leavitt, F. P. McCarthy, L. M. S. Miner, A. L. Morse, F. W. Morse, William Rice, A. P. Rogers, Benjamin Spector, K. H. Thoma, Benjamin Tishler, Harry Trimble, G. H. Wright—22

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III. NOTE ON THE WILLIAM J. GIES FELLOWSHIP IN BIOLOGICAL CHEMISTRY AT COLUMBIA UNIVERSITY[4]

Edgar G. Miller, Jr., Ph.D., Chairman of the Fellowship Committee

In the last annual report we indicated the reason for *temporary* discontinuance of the appointment of Fellows to conduct *dental* research. The fifth Fellow, to serve for 1932–33, is Joseph S. Fruton, B.A. (Columbia, 1931), who is now conducting research on the cystine-cystein system. The financial status of the Fund is indicated below:

Principal of the William J. Gies Fellowship Fund, held by Columbia University on June 30, 1931, as recorded in the last annual statement[5]	$32,274.98
Addition to the *principal* of the Fund in 1931–32: One-half of the income in 1931–32[6]	806.88
Total amount of the principal, June 30, 1932	$33,081.86

IV. QUOTATIONS ON THE STATUS OF DENTISTRY[7]

Assembled from the quotations published on pages 2, 3 and 4 of the covers on the six numbers of this volume

The greatly improved standing of the dental profession among the professions . . . . is one of the most striking changes in public opinion

[4] Previous reports were published in the *Journal of Dental Research:* (1) 1927, vii, p. 530; (2) 1928, viii, p. 679; (3) 1929, ix, p. 741; (4) 1930, x, p. 771; (5) 1931, xi, p. 912.

[5] The total there reported was $32,275.13 as given to the Committee officially, but subsequently an error of $0.15 in the calculations was noted and is here rectified.

[6] Goodridge, Howe, Dunning, and Waugh: *Journal of Dental Research*, 1927, vii, p. 530. From 1928–1937, inclusive, 50 per cent of the annual income will be added to the principal amount of the Fund; from 1938–1947, inclusive, 30 per cent; from 1948–1957, inclusive, 10 per cent. Beginning in 1958 (January 1), the whole of the annual income will be available for current use.

[7] A similar series was published on pp. 914–19 in vol. xi (1931) of this *Journal*.

that I have witnessed during my seventy years of observation of educational progress . . . . I do not think I have seen during my seventy years of observation of the professions and the means of training them any change so great as that which has taken place in regard to the dental profession, and to the means of training dentists.—*Charles W. Eliot, President Emeritus of Harvard University,* on "The progress of dentistry and of the dental profession." *Address* before the Dental School Society of the Phillips Brooks House Association, Harvard University, December 8, 1924; *Pamphlet,* Harvard Dental School, 1925, pp. 14 and 19.

The dental school is one of the most important of these agencies [for the training of a qualified body of public health servants] . . . . Today under the leadership of the best men in the profession it has set its face resolutely toward high service and honorable standards . . . . It must have generous financial help, such as has been accorded in the last ten years to many of our medical schools, if it is to carry out its duty to the public health service. There is today no more direct method by which the public health can be served than to enable the universities to place their dental schools in a position to give the kind of education for which the world stands in need.—*Henry S. Pritchett, Ph.D., LL.D., Sc.D., Carnegie Foundation's Bulletin on Dental Education (1926); Preface,* p. xx.

I think it unlikely that physicians, unless they have a particular interest in the border subjects between medicine and dentistry, will maintain a permanent interest in dental research. This interest may be fostered for a period of special grants, but after these grants are used up or the individual matures, he will probably revert to medicine and not be a permanent investment for dentistry. . . . . The nucleus of . . . . [the] research group [for the advancement of dentistry] in my opinion must be dentists who have had the dental training and have a permanent interest in this field, who have taken the time to get additional training in some of the preclinical sciences. This of course corresponds to the make-up of the preclinical science group in medicine today. I feel a strong conviction, therefore, that individuals who would help dentistry should first help to develop re-

search workers with dental training and dental interest.—*G. H. Whipple, A.B., M.D., M.A., Sc.D., Dean and Professor of Pathology, School of Medicine and Dentistry, University of Rochester; New York Journal of Dentistry*, 1931, i, p. 159.

Medicine and medical education have troubles of their own which will not be alleviated by attempting to swallow whole another profession; a profession, which, by and large, does not want to be engulfed. And a profession like dentistry, with a hundred-year history, deserves to have its feelings considered. You may call dentistry a specialty of medicine, but that does not make it so; and it is none the less valuable for that fact. I can see no reason why the degree, Doctor of Dental Surgery, honestly held and honorably upheld, should not in the future deserve equal respect and esteem from the public with the degree of Doctor of Medicine, provided it is held by a similar type of man. And whatever their future relationship may be, let medicine and dentistry now go forward side by side as friendly collaborators in the estimable undertaking of offering help to those who need it and adding to the happiness of life as much as to the length of its span.—*F. T. Van Beuren, Jr., A.B., M.D., Associate Dean, and Associate Professor of Surgery, Columbia University College of Physicians and Surgeons, New York City: Journal of Dental Research*, 1932, xii, p. 249; April.

We believe that the best interest of the dental profession, the public and all others concerned can best be served by a *continuation* of the separate organization of the dental profession. The fundamental soundness of this contention has been proved by the ninety-two years of continuous and remarkable progress of the dental profession, despite many handicaps, and important and serious opposition. We are convinced that the dismemberment of the dental profession through adoption of some of its parts by the medical profession, and the relegation of the remainder to comparatively uneducated technicians would seriously depreciate the quality of dental ministrations to the public. We believe that any advantages that might possibly arise from such destruction of the dental profession would be more than equalled by the development of dentistry into the full health-service *equivalent* of an oral specialty of the practice of medicine, and this

could be accomplished without the disadvantages that would accompany the former procedure. . . . . The fact that the dental profession [like every other profession] falls short of perfection should not subject it to unreasonable attack, especially from those who should be most interested in fostering its progress.—*Report of Committee on Dental Education, New York Academy of Dentistry; adopted by the Board of Governors, April 14, 1931; History of the New York Academy of Dentistry*, by B. B. Palmer; 1932, p. 51; April.

Dentistry can best serve the public and promote its own professional attainments by continuing as a separate profession.—*Report of Committee on Dental Education, Minnesota State Dental Association; adopted by the Association; Journal of the Minnesota State Dental Association*, 1932, xi, p. 49; April.

Emphatically, dentistry is a branch and not a mere twig growing on that of medicine, and I contend that the attempt to make it so is responsible for the miserably low standard of dentistry in this country [England]. The dental profession is . . . . lacking in self-reliance after all these years of subservience and dependence, and is like a flock of bewildered sheep, harassed on every side by conflicting interests . . . . America the world over holds the premier position in dentistry. . . . . Can you think of a single article of modern surgery equipment which did not originate in the States, and where do you have to go if you want the very best? . . . . Why is it that in dental affairs England is so far behind America? It seems to me that the reason lies in the control of dentistry by the medical profession. . . . . To adopt a railroad simile, dentistry [in England] has got on to the wrong line. Instead of a dental train controlled by a dental staff, running on its own lines, the dental profession is relegated to a van at the tail-end of the medical train, with practically no choice as to its destination.—*H. C. Visick, L.D.S., R.C.S. Eng.: Journal of Dental Research*, 1932, xii, p. 585; Aug.

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of Enquiry Appointed by the League of Nations." On page 19 of that *Report*, at the head of the paragraph entitled "Nationalism in the schools" [of China], the abiding influence of Sun Yat-sen in Chinese affairs is emphasized, in part, as follows:

"It is provided in the Provisional Constitution of China promulgated on June 1st, 1931 (Article 47 of the Chapter on 'Education of the Citizens'), that 'the Three Principles of the People [*San Min Chu I*] shall be the basic principles of education in the Republic of China.' The ideas of Dr. Sun Yat-sen are now [September, 1932] taught in the schools as if they had the same authority as that of the Classics in former centuries. *The sayings of the master receive the same veneration as the sayings of Confucius received in the days before the Revolution.*" [Italic not in the original.]

Every dentist who appreciates *the spiritual and intellectual importance, for his profession*, of constructive public service *by dentists* will wish to study William's new book, which is an important contribution to the solution of current international problems, and of economic difficulties in the United States. Laymen should be shown this book as the work of a practising dentist. *Publisher:* Williams and Wilkins Co., Mt. Royal and Guilford Aves., Baltimore, Md.—*William J. Gies, Columbia University, October 10, 1932.* [Next to last paragraph added on December 1, 1932.]

Quotations on the Status of Dentistry

The greatly improved standing of the dental profession among the professions . . . . is one of the most striking changes in public opinion that I have witnessed during my seventy years of observation of educational progress. . . . . I do not think I have seen during my seventy years of observation of the professions and the means of training them any change so great as that which has taken place in regard to the dental profession, and to the means of training dentists.—*Charles W. Eliot, President Emeritus of Harvard University*, on "The progress of dentistry and of the dental profession." *Address before the Dental School Society of the Phillips Brooks House Association, Harvard University, December 8, 1924; Pamphlet; Harvard Dental School*, 1925, pp. 14 and 19.

Medicine and medical education have troubles of their own which will not be alleviated by attempting to swallow whole another profession; a profession, which, by and large, does not want to be engulfed. And a profession like dentistry, with a hundred-year history, deserves to have its feelings considered. You may call dentistry a specialty of medicine, but that does not make it so; and it is none the less valuable for that fact. I can see no reason why the degree, Doctor of Dental Surgery, honestly held and honorably upheld, should not in the future deserve equal respect and esteem from the public with the degree of Doctor of Medicine, provided it is held by a similar type of man. And whatever their future relationship may be, let medicine and dentistry now go forward side by side as friendly collaborators in the estimable undertaking of offering help to those who need it and adding to the happiness of life as much as to the length of its span.—*F. T. Van Beuren, Jr., A.B., M.D., Associate Dean, and Associate Professor of Surgery, Columbia University College of Physicians and Surgeons, New York City; Journal of Dental Research*, 1932, xii, p. 249; April.

Emphatically, dentistry is a branch and not a mere twig growing on that of medicine, and I contend that the attempt to make it so is responsible for the miserably low standard of dentistry in this country [England]. The dental profession is . . . . lacking in self-reliance after all these years of subservience and dependence, and is like a flock of bewildered sheep, harassed on every side by conflicting interests. . . . . America the world over holds the premier position in dentistry. . . . . Can you think of a single article of modern surgery equipment which did not originate in the States, and where do you have to go if you want the very best? . . . . Why is it that in dental affairs England is so far behind America? It seems to me that the reason lies in the control of dentistry by the medical profession. . . . . To adopt a railroad simile, dentistry [in England] has got on to the wrong line. Instead of a dental train controlled by a dental staff, running on its own lines, the dental profession is relegated to a van at the tail-end of the medical train, with practically no choice as to its destination.—*H. C. Visick, L.D.S., R.C.S. Eng.: Journal of Dental Research*, 1932, xii, p. 585; Aug.

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